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MODERN HOLLAND

BY JHR. JAN FEITH

THE OFFICIAL INFORMATION OFFICE
FOR TOURISTS AT THE HAGUE

NIJGH & VAN DITMAR'S PUBLISHING CO. LTD
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MODERN HOLLAND

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MODERN HOLLAND

BY JHR. JAN FEITH

Translated from the Dutch

WITH A FOREWORD BY HIS EXCELLENCY WM. PHILLIPS
U.S. MINISTER TO THE NETHERLANDS

NIMMER-DRALEND

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CONTENTS

Chapter		Page
I.	Something about our Geography	9
II.	How the Country is Governed	25
III.	Something about our Spiritual and Social Life	37
IV.	In the Realm of Dutch Arts and Sciences	48
V.	Dutch Agriculture, Cattle and Fish	82
VI.	Dutch Finance and Financial Institutions	112
VII.	The East and West Indian Colonies	122
VIII.	The Dutch on the Water	154
IX.	Industrial Holland	174

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FOREWORD.

Americans have a genuine affection for Holland. We like to study her history, we sympathize with her struggle for independence, and we compare her national hero — the great Stadthouder William the First of Orange — with our own hero, George Washington.

We remember that when the Pilgrim Fathers fled from England it was the Dutch who welcomed them and gave them asylum for twelve years. Our historians tell us that these same Pilgrim Fathers brought with them to America new ideas about liberty of conscience, State rights, and local self-government, which they had learned from the Dutch and that these very principles were woven into our Constitution in such a way that they became the foundation of our national existence.

We are proud, too, of our Dutch ancestry and of our illustrious Americans of Dutch descent.

And we like to dream of the picturesque Holland of to-day: of the seas of green fields, of the peaceful grazing cattle, of the tiny red-roofed villages, of quaint costumes and wooden shoes, and of the aristocratic windmill silently watchful.

And yet, in spite of our fund of information, we seem to know little indeed about modern Holland, her system of government, her schools and universities, her arts and sciences, the development of her great cities, her world of finance and financial institutions, nor have we given much thought to the extent of Dutch agriculture, or to the splendors of the Dutch colonial empire and the wealth and opportunities that lie hidden among the forests, plantations and mineral resources of Java, Sumatra and Borneo.

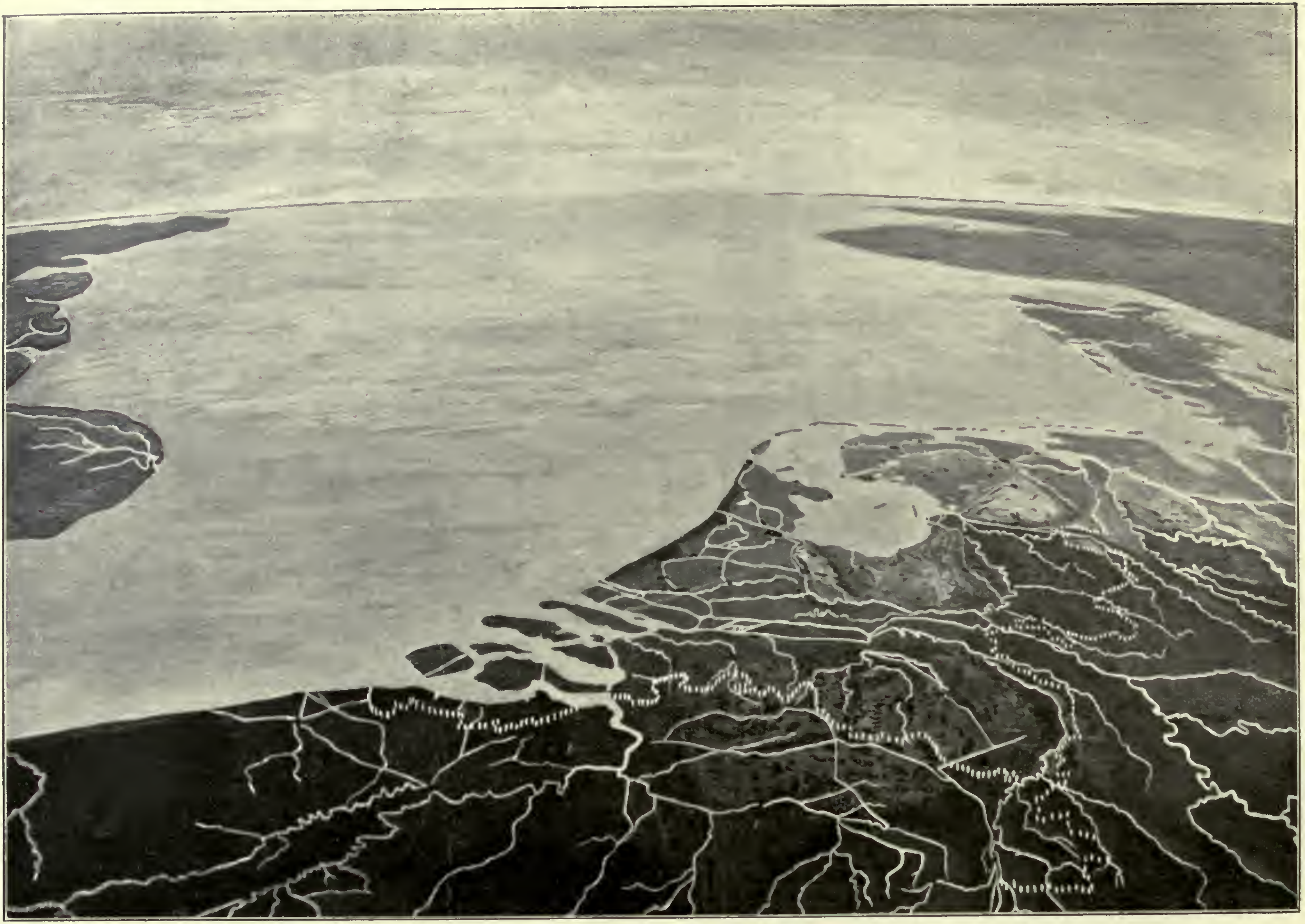
This volume — "Modern Holland" — has been prepared with a view to enlighten us in America about our friends and contemporaries, the Dutch people of to-day. Here we see them at work and at play, vigorous and proud of their splendid traditions, yet prouder still of their country as they find it in the Twentieth Century.

The various chapters reveal to us that the Dutch are businessmen like ourselves, that they are international traders and carriers, that they have a splendid merchant marine, and that we have much to learn from them in matters of business and in the art of living. We find that they attach the same importance to education as we do, that they are healthy in mind and in body, and that they have the same regard for truth and fair play that we have. We reach the conclusion that there is far more in common between Americans and Dutch than we had suspected and that we can whole-heartedly co-operate with them for our mutual advantage and for the betterment of the world in general.

THE HAGUE, January 1922.

William Phillips.

U. S. Minister to the Netherlands.



Perspective Map of the Netherlands.

CHAPTER I — SOMETHING ABOUT OUR GEOGRAPHY

If you saw Holland from a flying machine.— Along the North Sea coast.— High and Low.— Lower than sea level.— 500.000 acres of fertile land are waiting under the sea.— The unending struggle against the inland waters.— The history of the Dutch polders. — The water mill.— The modern type of polder.—"N. A. P."— The inundation system.

If you saw Holland from a flying machine.— If you wished to survey the whole of the Netherlands, to have a bird's eye view of the entire country, you would in these days look down from the observer's seat of a flying machine, or from the gondola of an airship, flying over the country at a speed of some 90 to 120 miles per hour, and you would be able in this way to obtain a rapid and general impression of the territory beneath you.

The greatest length of the Netherlands, from North to South, is over 190 miles, and its extreme breadth from its sea boundary in the West to its land boundary in the East, is nearly 125 miles. The whole country has a total area of little more than 15000 square miles, [1] and does not cover more than a very modest 1/300th part of the continent of Europe, being one of the last in the list of European states according to their size.

Such a territory could actually, thanks to modern aviatic possibilities, be seen in its entirety from one horizon to the other, an advantage — you will admit — for the curious observer, who, with an all-embracing glance wishes to survey this country, and note its geographical lines as well as the diversity of its grounds.

For in this way this exalted observer would recognize beneath him one of the most peculiar types of land, such as no other air excursion above any other land in the world could show him.

Beneath him he will see an almost perfectly flat stretch of land gradually sloping from the South-east towards the West and North, so regularly indeed, that the fall is almost imperceptible, until it finally descends so low that the green plains, intersected by innumerable rivers, canals and ditches of all kinds, lie lower than the sea, against whose inroads it is only protected by an irregular chain of dunes and dykes' walls!

Along the North Sea coast.— The white breakers, in perpetual motion, stretch far beyond the whole West and North coast; the observer aloft, on seeing the breakers, will immediately recognize this to be the dangerous type of coast to be met with elsewhere: a shallow coast full of sandbanks and shoals, almost inaccessible from the sea because of the very gradual rise of the sand bottom towards the land. The dunes bulge out their sandy tops, sparsely planted with helm grass, like a humble buttress against the sea; their breadth is unequal along the coast. In certain places where the narrow strip of dunes threatened to be completely swept by the landward surging sea, long and missive sea dykes bar the way, as, for instance, in the Southern islands, forming part of the province of Zealand, where the Westkappel dyke protects the island of Walcheren, and more northerly on the coast of North Holland, where the Hondsbosch sea wall covers a former opening in the dunes.

In other places again he will see the girdle of dunes narrowing down ominously, and artificial reinforcements of the shore have been constructed in order to prevent any further erosion of the shore and of the dunes behind it, as can be seen along the coast of the so-called Westland, which by means of its piers or breakwaters has to protect the greater part of the mainland of South Holland, and between Petten and the northern portion of North Holland near Huisduinen, where a long row of stone piers runs into the sea from the shore at intervals of two or three hundred yards.

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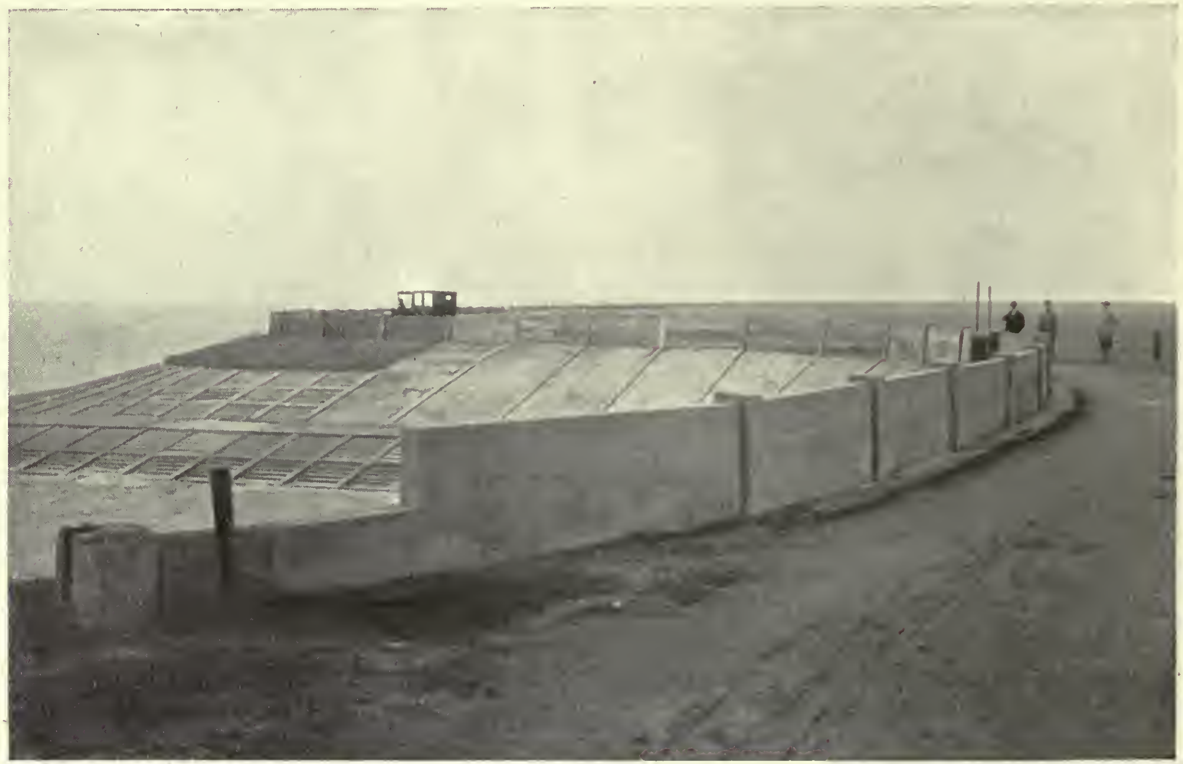
[1] The exact figures are 15010 sq. miles, of wich 12921 sq. miles are land, and 2089 sq. miles are water, not counting the inland sea waters and river mouths.

From such an elevated position the spectator will easily see that it has not everywhere been possible to protect the low-lying land against the inroads of the turbulent sea. The strip of dunes in the North and South shows a very fretted line; the natural sea wall of the dunes, thrown up by the treacherous and fickle sea, as it were, against its own capricious moods, seems to be too low and too narrow to turn the wild attacks of the waters at spring tide or in a storm from the North or the West. What a number of breaches and openings gape threateningly here and there.



Dike of armoured concrete, de Muralt's system.

The coast to the north of North Holland, Friesland and Groningen has even assumed the shape of a narrow chain of islands, which bear the names of Texel, Vlieland, Terschelling, Ameland, Schiermonnikoog and Rottum. They are formed of dunes rising but a few meters above the sea level, bordered by a deep foreshore, but severed from the mainland by the shallow Wadden Sea.

Following the coast line we find the sea water glistening below in three large gulfs; the Dollart and the Lauwerzee penetrating into the land on either side of the province of Groningen, and the third inland sea, the largest of the three, the Zuider Zee, which covers some 875.000 acres.

The south-western coast line is broken by the wide mouths of the three large rivers, the Rhine, Maas and Scheldt; these rivers wind their way from the South and East to the western sea coast where, with the ready aid of the greedy, land-grasping sea, they form larger and smaller islands which belong to the provinces of South Holland and Zealand.

On the outer border of the dunes from the Hook of Holland as far as Helder, lie the white sands of Holland framing the picture as it were with their delicate and regular curves, stretching the entire length of the coast, covered at every flood, and then again reappearing as the tide ebbs.

Dotted along the coast line are a number of fishing villages whose population largely devote themselves to fishing. At the same time a number of watering-places form excellent bathing resorts. Following the coast from South to North, nestling on the outer edge of the dunes close to the beach, are the well-managed watering-places of Flushing, Renesse, Domburg, Oost-Voorne, Hook of Holland, Kijkduin, Scheveningen, Katwijk, Noordwijk, Zandvoort, Wijk-aan-Zee, Egmond-aan-Zee, Bergen-aan-Zee, Koog on Texel, Terschelling, Oost Vlieland, Ameland and Schiermonnikoog.

Scheveningen sands and the pier.

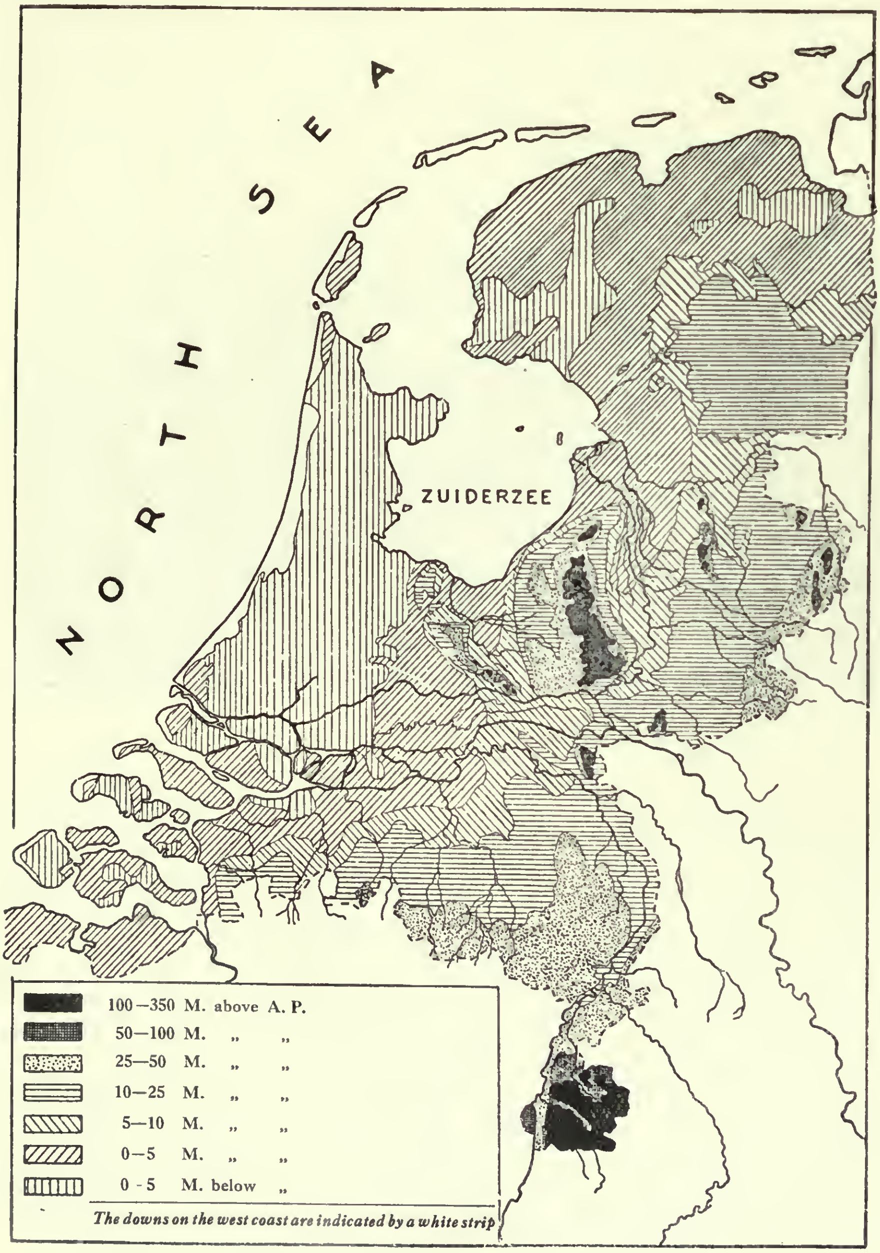
High and Low.— Behind the strip of coast then lies that peculiar land of Holland, which is so low that part of it is scarcely as high as sea-level, while a large part is even below that level.

As to its surface, the landscape is most regular, and almost without the scenic surprises when highlands alternate with lowlands of sudden heights with valleys, indeed, it is here of a uniform flatness.

But who on this account would call the appearance of the country monotonous? For although a large part of the land is flat and low, our observer in his flying machine will see at a glance that there is a difference between the extremes, the lowlands of the West and North, and the higher parts in the East and South-east of the country, so that two entirely different parts of the Netherlands may be distinguished, even with regard to their flora and fauna.

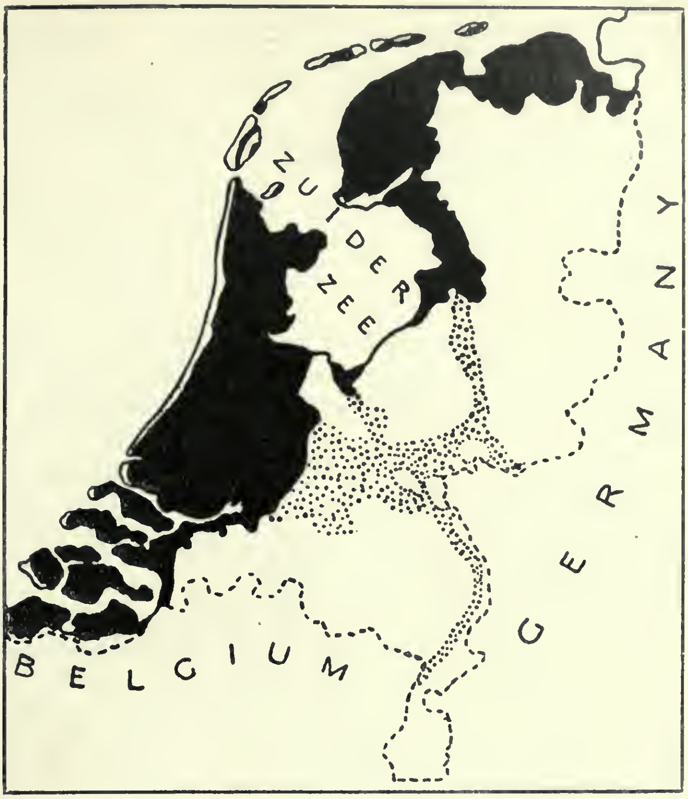
The lower regions exhibit a formation which is almost unique in the world, because here the land, in the immediate vicinity of the sea, lies below its level. The rest of the country belongs to the dry portion and shows a gradual elevation which, at the "Four Land Point" in the South of the Province of Limburg, attains its greatest height of some 320 meters scarcely equalling the Eiffel Tower of Paris.

The latter portion of the country is clearly seen to be undulating and hilly, sometimes even reminding one of a plateau (in South Limburg and in the province of Drente) and with distinct ridges of hills in the upper Gooi (between North Holland and Utrecht), in the Veluwe and in the neighbourhood of Nymegen, and again in the eastern divisions of the province of Guelderland and Overijssel, whereas elsewhere, as in Drente and the south-eastern portion of Friesland, gentle mounds appear. The rise and fall of the land is easily seen if we fly down the course of the Maas, Rhine and Waal, which hasten in a fairly regular fashion from the higher levels of the Eastern and Southern provinces to the deeper ones of the West coast.



Map showing the levels in Holland.

Lower than the sea.— The most typical part of the country, however, is the Western and Northern portion. If for the moment we assume that neither the line of dunes, nor the artificial embankments could keep out the sea, almost one third of the country would disappear under the billows, the three Western provinces of Zealand, South- and North Holland, would be entirely submerged, a considerable part of the province of Utrecht, which lies behind them, a large portion of the provinces of Friesland and Groningen, and also part of Overijssel. All these tracts of land lie either below or not more than a few feet above the level of the sea.



A breakdown of the sea-dikes would cause inundation of the parts in black. The dotted portion would be flooded if the river-dikes of the Meuse, Rhine and Yssel broke.

These parts, consequently possessing no natural drainage, compose the characteristic "Netherlands"; these are the lowlying provinces which have given our country the modest name of "nether"-lands, or simply sometimes "Low-Countries" and which are so typical of the Dutch landscape. ¹)

And even better than by the name of "lowlands" these parts of the Netherlands could be called "Polderland", and I shall now explain why, and what is to be understood by a Dutch "Polder."

As this subject lies so close to the ground, indeed the principal part of it lies below the sea's low water line — do not the inhabitants of the Haarlemmermeerpolder, of the Zuidplas and Prins Alexanderpolder live and work at some twelve to fifteen feet below the mean level of the sea?! — we will bring our flying machine to the polder level, and, in order to examine this land, lower than the sea, we will alight on terra firma .... which is here by no means so firm!!

As a matter of fact there are several types of polders in this country, each of which enjoys a separate name. I shall only touch upon the two main types, the sea- and inner polders. By the first, the sea-polder, is meant the land that has been reclaimed from the sea by means of dykes. A genuine gain therefore honestly conquered with great difficulty, not by force of arms, but acquired, indeed, according to the prevailing notions of justice, because this polderland was wrested from the sea, after in many cases the same sea had in former days swept away this land. We might therefore call this gain of land a quite permissible re-occupation. Putting aside all historical or political events, which, by the way, the Netherlands have not been spared, the country has during the last few centuries been able to expand her territory in this manner to a considerable extent.

The same openings in the coast as we mentioned above, the two North Sea breaches in the

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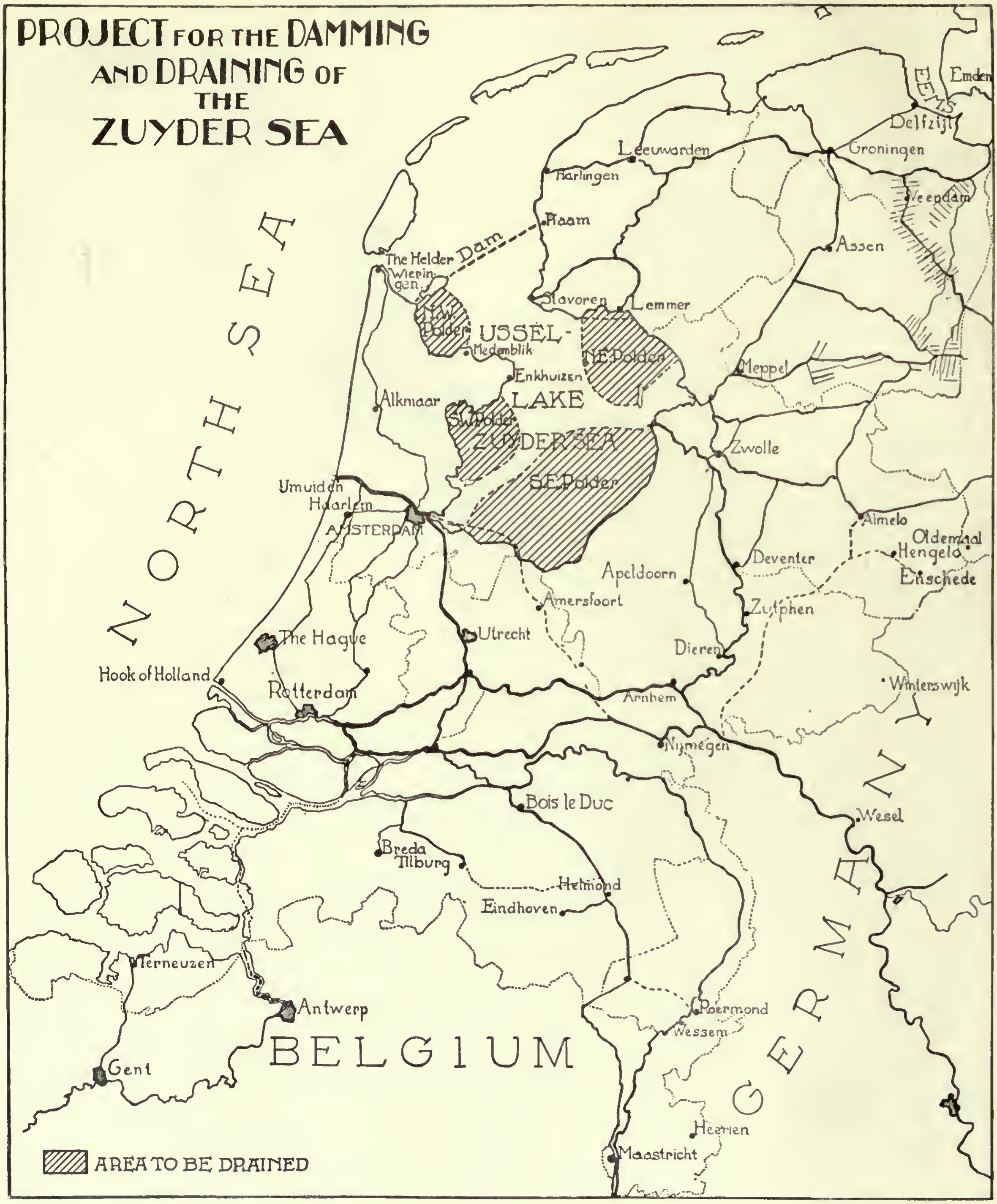
¹) The origin of the name "Holland" cannot be determined with much certainty. We only know that it was first given to the neighbourhood of the town of Dordrecht, whose soil was formerly very infirm, and was later on swallowed up by the water (the Biesbosch. In many places of Holland the soil is still rather infirm or "hollow" (Dutch "hol"), as, for instance in the "Vondelpark" at Amsterdam, where the ground shakes when a carriage passes.)



PROJECT FOR THE DAMMING AND DRAINING OF THE ZUYDER SEA

▨ AREA TO BE DRAINED
NORTH SEA
BELGIUM
GERMANY
USSEL-LAKE
ZUYDER SEA
N.W. Polder
N.E. Polder
S.W. Polder
S.E. Polder
Dam
EEMS
Emden
Delfzijl
Groningen
Leeuwarden
Harlingen
Piaam
Veendam
Assen
The Helder
Wieringen
Stavoren
Lemmer
Medemblik
Enkhuizen
Meppel
Alkmaar
Zwolle
Umuiden
Haarlem
Amsterdam
Almelo
Oldenzaal
Hengelo
Enschede
Deventer
Apeldoorn
Amersfoort
Zutphen
The Hague
Utrecht
Dieren
Hook of Holland
Rotterdam
Winterswijk
Arnhem
Nymegen
Wesel
Bois le Duc
Breda
Tilburg
Helmond
Eindhoven
Terneuzen
Antwerp
Roermond
Wessem
Gent
Heerlen
Maastricht

province of Groningen, still being land in very early times, even before the arrival of the Romans in this country, were washed away and submerged in the Middle-Ages by storms and floods, but in course of time the soil was and is being regained by diking in. And how fertile a soil this heavy sea-clay has proved to be! The Dollart has already been forced to surrender about 30.000 acres, and the Lauwer-Zee about 38.000 acres to the polder-people! And if we visited the southernmost part of the province of Zealand, which is called Zealand-Flanders, we should see striking examples of places that were formerly flourishing ports and fishing harbours, but whose distance from the sea has steadily become greater, owing to the constant fresh reconquests of land by means of dykes.

500.000 ACRES OF LAND WAITING UNDER THE SEA.— A far more striking instance of this most peaceful of all conquests of fresh land will shortly be seen in the reclamation of our large pond, our largest inland-sea, the Zuider-Zee, closed in by the Northern provinces of North Holland, Utrecht, Guelderland, Overijssel and Friesland.

A Bill submitted to Parliament in 1916 projecting the partial reclamation and "poldering in" of this extensive saltwater inland sea, which is directly connected with the North Sea, was passed in 1918 thus crowning the life-work of Mr. Lely, Minister of "Waterstaat" (Department of Buildings and Roads, etc.). The engineers' plans are to be carried out under the direction of the engineer, Mr. H. Wortman, Inspector-General of the abovementioned Department. The engineers purpose, after having separated the Southern portion from the Northern by a heavy dyke, to pump dry four separate parts of the Zuider-Zee of 54252, 78125, 269400 and 127125 acres respectively, making a total of nearly 530.000 acres, while between these new sea-polders, a sheet of water would be left of 362500 acres superficial area, which shall take the form of an artificial fresh-water lake, the so called "IJsel"-lake, intended to collect the water from the old and new polders, and also to receive the water from the rivers which at present fall into the Zuider-Zee.

Thanks to modern machinery and by means of distributing the labour of diking and pumping equally over a period of about 70 years, comprising 30 years for the North Holland polders only, this stupendous work can be performed at a cost that will later on be amply compensated by the production of the land, for there is no doubt but that we can count on about 500.000 acres of fertile soil. More than ever have the days of the last war proved to what extent the Netherlands are dependent on foreign countries for food, and if our neighbours had not been gracious enough to decide in our favour, the stoppage of food stuffs would even have brought a famine in this country. Here we have a project which will considerably strengthen the country's economic independence, as it will enable the Netherlands to open up a very large tract of land to new prosperity. Enormous expenses of mobilisation and military equipment had to be paid, which are in themselves unproductive, whereas for the execution of this project far smaller sums are required that, being distributed over a number of years, will certainly not be above our financial strength, but will enable us to create a work which will in the future greatly augment our economic prosperity, and which, as a splendid granary in the centre of the country, will increase the national powers of resistance.

And although we realize that there is a difference between the passing of a Bill in Parliament and the reclamation of a portion of the Zuider-Zee, we may reasonable expect that this new attempt to extend Netherland's territory within its boundaries will be completed within a calculable space of time.

THE ENDLESS STRUGGLE AGAINST THE INLAND WATERS.— Side by side with these sea polders we possess in the Netherlands a second type of polder, which is to be found in a large part of the Western provinces and which owes its origin to the existence in former times of a vast morass with a considerable number of large and small lakes and meres. Such fresh water lakes are nowadays found only occasionally in the Dutch landscape, for new works are being constantly undertaken in order to recover the land lying under these sheets of water — for on the whole there is more than enough water in this aqueous country, and land is a national property which we have learnt to fertilize and turn into fields suitable for agriculture or cattle-breeding.

Dike of the Zuider Zee.

The Dutch inner polder is one of the most remarkable forms of the Netherlands' territory. Each polder possesses its own history, and if we could collect them all together, they would form some of the most absorbing pages in the glorious history of the Low Countries!

It is an ancient feud which has been maintained obstinately for many centuries, a fight which in a different form must be fought to the bitterend, but the end is here usually a most happy one. For while the North Sea and the no less dangerous inland sea, the Zuider Zee, repeatedly storm the coast, [1] the inland water of the lakes and meres have been no less agressive.

In the same way as the breakers of that high seas had to be repulsed by the dunes and dykes, an incessant struggle was being waged against the fresh water which threatened to wear down its inland barriers.

In former days every storm signified a new victory of the water. The army of waters was never beaten; every fresh blast of wind urged the foaming ranks to the attack in long heavy rollers. No windy day passed — and they are frequent in this flat country of ours! — without the water having won some victory, which meant a defeat for the defenceless land. After each attack long stretches of shore or bank had to be yielded, swallowed up as loot of war by the insatiable enemy.

It has been calculated that on an average 40 to 50 acres of land round our inland waters formerly disappeared every year, which eventually meant a loss of many hundreds of acres of valuable ground. If we could have made up the account at the end of each century the figures would have run into thousands. Of one of our largest lakes, the Haarlemmermeer, which extended between Amsterdam, Haarlem and Leiden, an old chronicle relates that about the year 1500 it covered approximately 23.000 acres, while in the year 1700 it had already expanded to 38.000 acres, and in the year 1870 it even reached 45.000 acres.

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[1] The emotion caused by the last heavy Nor'wester in January 1916, which did incalculable damage in the provinces of North-Holland and Guelderland, and after having smashed the Zuider Zee dykes to pieces at various spots, inundated the low polders lying behind them, is still fresh in every one's memory. The Dutch engineers have again splendidly maintained their reputation by repairing the breaches in the dykes and pumping the flooded land dry in the short space of six months.

It was however several centuries ago that our forefathers realised their peril, though it is comparatively recently that the steadily increasing danger of the inland waters has been definitely met. The 17th. century is an important period in the history of the internal war in the Dutch waterland and the population then first energetically came to the help of the powerless land. Patchings and mendings would no longer do; our own country which had been defended against the sea on the outside with so much difficulty, was being slowly but surely devoured inwardly. It is since that time that the poldering of the inland meres has been systematically carried out on a large scale, which was rendered possible by the invention in North Holland of a workable wind-watermill.

THE HAARLEMMERMEER.— If we confine ourselves to this large inland lake, which has since become our largest polder, we find that "Rijnland", the Conservancy within whose jurisdiction this sheet of water lays, was not able to bear the expense of putting up a dam sufficiently strong to withstand the violence of the waters; the help of the States General of Holland was called in, for not only a provincial, but also a most important national interest was at stake. The national treasury thereupon paid 2½ million guilders and the Rijnland Board 1 million — enormous sums in those days — for this purpose. With this financial support a better defence was put up; a heavy dyke was constructed along the entire eastern shore of the lake. The population of the menaced villages was so grateful that in the ancient town of Aalsmeer the date on which was proclamed the resolution promising the aid of the States General, viz. March 18th. 1767, was made into a day of prayer. This thanksgiving day is however no longer kept in this Dutch village of flowers.

This dyke proved to be insufficient; the water had realised that its piratical wars were threatened now that the people had rushed into the help of the defenceless land and had laid down their high and strong dykes, in order to paralyze the force of the watery legions. The water therefore devised another stratagem. It either burrowed itself a way under the broad base of the dyke, or it dashed its insolent breakers over its brow; sometimes it would with staid patience cunningly gnaw the verry marrow out of such a heavy dyke, and sometimes it would collect its main forces and assault a weak spot.

It was in this way, to take this same Haarlemmermeer as an example, that almost a century ago, it was on November 29th. 1836, the surface of the lake was whipped up by a severe westerly storm until the water rose to 3 feet and more above the normal level, and a part of the province of North Holland of no less than 10.000 acres was inundated, so that the host of foaming waves even reached the gates of Amsterdam; and scarcely a month later, during a roaring storm from the East on Christmas day, submerged no less than 19.000 acres in the province of South Holland.

And when the danger became so threatening that even Amsterdam and Leiden, which lie not far from the shores of the large lake, ran the risk of being flooded, a general plan was finally projected, by an act of parliament of March 22th. 1839, to pump out the water of the entire lake. This dangerous water was then entirely diked in; three strong steam pumps were erected at three different points, and twelve years labour was necessary to remove the 800.000.000 cubic meters of lake water, and force it to the sea.

This work, which was commenced in 1840, cost f. 13.000.000 and took twelve years to be

In "polder"-land. Dike on the island of Tholen.

completed. In 1853 the first public sale of the 42205 acres took place, the total land realizing about f. 8.000.000. These grounds were afterwards divided into two polders by a dike.

The watery enemy, which had been untamable for so many centuries, was at last conquered, and a fertile polder district of over 45.000 acres of land had been won in its stead.

This is, briefly, the history of one of the Dutch inner polders. As to what we have been able to make of it, I shall speak later on. This is only given as an example of the manner in which fresh land can be gained within the Dutch boundaries.

WHAT A POLDER IS LIKE.— It is an incontrovertible fact that no description of the Netherlands — at least not of the Western half of the country — can be complete without mention being made of the history of such polders.

As a matter of fact I shall have to dig the primeval history of our Dutch polders out of a watery, boggy past, when almost the whole of the low-lying parts of Holland, Zealand, Friesland and Groningen were the source of a constant gnawing fear to our forefathers. The gradual change of the face of the land and its evolution would have to be outlined; how the interior, which was exposed to repeated inundations from the wild greedy lakes and meres, was reclaimed and how precisely those diked districts have, owing to their proverbial fertility, become the best parts of the country — the land of Dutch milk and honey!

It is not my intention, however, to devote an extensive treatise within the limits of this book to the history of our sea and lake-polders, turf-fields and reclamation of land, which steadily succeed each other everywhere in the Northern and Western provinces. Neither shall I weary you here with lengthy details as to the ingenious system of broad, circumventing canals and mill-courses, of narrower ditches and channels separating the fields, of the gullies and grooves which look as if they had been drawn with a ruler; nor can I touch upon all that belongs to our world-famous hydraulic engineering, which in its dredging and pumping machinery has, in times both past and present, sucked out immeasurable quantities of water from the deep hollows of the low countries, has pressed out the water through the draining sluices, which in turn are connected with the intermediate and higher levels of water, the superfluous quantities then being drawn off to outer canals until this enormous volume of water can be absorbed by the ocean.

To write of the Dutch polders would mean writing one of the most important pages in the history of the country itself. As I have already said, its beginnings can be traced as far back as the 13th. century, when the powers then ruling in this country had already laid down the rights and obligations of the first large "Hoogheemraadschap" (Conservancy) of "Rijnland" in the neighbourhood of Leiden.

Mills in polderland.

It is remarkable how this ancient conservancy has been maintained in the country; numerous examples could be cited of very old conservancies, still persistently observing their conservative institutions and regulations, though of course the system of constructing dykes, pumping and poldering has kept pace with the improvements of modern science.

The water-mill. The only mechanical means which was formerly applied withs uccess in this country for the pumping of the extensive waters and polders, was the water-mill. The Dutch wind-water-mill therefore dates from the fifteenth century, but was not very well workable until the seventeenth century, when the revolving cap was invented.

For the pumping dry of the low polders these mills were exclusively dependent on the wind; they had to be kept constantly at work with their wings in restless revolution. The low polder-water often had to be raised to a height of 12 to 15 feet in order to bring it to the level of the surrounding canals, and to force it further from them until it could do no further harm. One mill, however, was not always strong enough to raise the water to this height, and very often 4 mills were built immediately behind each other, which formed a so-called "gang", of which each mill raised the water about 3 to 4 feet and the fourth or last mill, called "uitslaander", (1) poured the water into the encircling canal.

In many parts of the country water-mills may still be encountered. The Dutch water-mill, which experience has proved to be extremely practical, has in the course of centuries well performed its responsible task; it does its work in the old-fashioned way, provided the wind blows, and a rule there is sufficient wind above the low lands near the sea.

Such revolving mills planted stiffly one behind the other have not been put up for show, or as a typical decoration of the sometimes monotonous landscape of the Dutch polders; their busy wings serve to keep the polders dry, i. e. to maintain the water at its proper level. If these mills were to stop pumping, how soon the polders would again be flooded! In this way, some of our old-fashioned polders, whose Boards have not thought it necessary to march with the times and consequently only possess the help of wind-mills, frequently suffer from excess of

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1) The "kickers-out" as it were.

water after a long period of calm. If for instance after a rude storm the outer water has penetrated to the polder and a treacherous calm follows the boisterous weather, the situation for the farmers in such a polder frequently becomes untenable. The farmers can no longer graze their cattle in the half-submerged, greasy meadows, where — according to a farmer's figure of speech — the cows eat with five mouths, meaning the damage which the cattle do with their legs to the partially saturated ground.

The steam-pump has in the majority of polders replaced the wind-mills. Steam took the place of wind because the water pumping machinery, with its ever ready pistons centrifugal pumps and wheels proved to be a more reliable servant than the water-mill, which was subject to the capricious moods of the wind.

With the application of steam, radical advantages had gradually been introduced in the polders. The water level was placed entirely in the power of man, so that the polder inhabitants were enabled to devote their time to other and more profitable industries besides cattle-breeding. Now that it is no longer so damp and soaked, the water growths which formerly flourished so plentifully have gradually disappeared and made room for plants which thrive better in drier soil. One result of this is that the quality of the Netherlands dairy products has considerably improved.

The better draining-system has made it possible to turn meadows into arable land, or, as it is called in this country, "green" into "black" land. The cultivation of vegetables has also met with great success. Instead of the polder farmer who, half a century ago was brought up as a cattle farmer, a new generation of poldermen grew up. The mowers became sowers and the milkers became gardeners.

The evolution in the character of the polders to their modern form was materially furthered when the rapid expansion of the various means of transport enabled the close network of railways, tramways and motorboat services throughout the country to connect most of the polders with the main lines of traffic, so that the products of these agricultural and cattle farms, of these vegetable and flower gardens, dairy factories and local industries could be swiftly carried to the most important market centres.

The modern type of polder. Let us now look closer at the picture which our modern polders present; we shall select as the handiest example the same Haarlemmermeerpolder as was mentioned above.

A railway journey of only a few hours, if we take Amsterdam or Haarlem as our point of departure, is sufficient to obtain an impression of this peculiar type of Dutch territory. A light railway of about 100 Kilometers will take you through 32 different polders, of which the Haarlemmermeerpolder is the largest.

The extensive area of the newly recovered land which was the former Haarlemmermeer has been divided into portions separated by ditches, by a main and a transverse canal, by channels running crossways and lengthways, and by a number of roads, marked, at regular intervals of course, with the necessary bridges. In this way the polder is cut up in oblong blocks of 750 acres each, composed of 15 pieces each containing 50 acres. The depth of the lake was formerly 12 to 15 feet, so that the level of the polder is now about the same depth in relation to the surrounding land. The greater portion of the grounds was after draining immediately devoted to agriculture, because the soils appeared to consist mainly of clay, mixtures of clay and sand, and of lake peat. At first rapeseed, rye, oats, wheat, barley, flax, potatoes, beans, various sorts of vegetables and also sugarbeet were successfully grown. Later, on account of a change in agrarian conditions, the population became chiefly engaged in the cultivation of cereals (9853 acres), sugar-beet (9578 acres), seed cultivation (2320 acres), flax (5535 acres) and clover (1030 acres).

I have only taken this large polder as being the most convenient example; there are however quite a number of large and smaller ones, but nearly all of them consist of fertile grounds grassy meadows for Dutch cattle and rich fields for Dutch agriculture.

Some polders can drain to the sea or the open rivers directly. The great majority, however, have to be drained along catch-water basins, from which basins the water is conducted out by sluices. Many polders of Friesland are served by one and the same catch-water basin, as is also the case with all polders of "Rijnland" (an area of 192.500 acres) and all polders of "Delfland" (over an area of 75.000 acres).

"N. A. P."—All this polderland only forms a portion of the Netherlands. Side by side with it we have the river-polder type, which does not require any special description because it does not, as such, differ from many river-polders found elsewhere. In the more elevated parts of the country polders are only occasionally met with.

As a matter of fact the whole of the Netherlands, however high or low any portion of it may be situated, may be deemed to have some relation to water. And this may perhaps explain the origin of the name of one of our principal government functions, which is called the Department of "Waterstaat".

This is most clearly seen in the indications which appear everywhere, and which are most closely connected with the level of the water. Most mysterious are, at first sight, the initials "N", "A" and "P", which are generally expressed in one breath "N. A. P." It is a mark surmounted by these combined letters which throughout the country serves as standard from which to calculate the level of the water. The height of the water is read as being so much *above* N. A. P., or one ascertains how much it is *below* N. A. P. There are entire districts where the inhabitants and cattle work and live at a level which is several yards below this N. A. P.

These three letters are the initials of the words "Nieuw Amsterdamsch Peil" which is the Dutch for New Amsterdam Level; this level which has been gradually introduced throughout the entire country, is used as a standard scale from which to determine all land and water levels. It has been derived from the mean flood tide in the river "Y" near Amsterdam, previous to this open arm being shut off from the Zuider Zee.

In this most watery land of ours every possible attention has for centuries past been paid to everything connected with the water level, and being able to read and to know the level of the water was one of our first national commandments.

Originally it was the duty of the City Water Office at Amsterdam to take these observations, and after many years this office had established its name as an accurate observer. From the capital, the Amsterdam level was calculated for the various provinces by means of levels, and distributed further from these points. Throughout the country the level with regard to the A. P. or "Amsterdam level" will be found cut in a stone inserted in the lock walls and in other fixed points in permanent waterworks.

The A. P. has gradually become part and parcel of the life of the people who live and work in the waterland; there is no skipper or bridgeman, no lock-master or polder-inspector who does not consider it as one of his most important daily functions to ascertain from the water gauge the height of the water in river or canal and its relation to the momentous N. A. P.

All the authorities concerned throughout the country control the local water level in correspondence with this generally prevalent level. In the polders they know exactly what water level must be maintained in summer or winter; at the pumping works, which pour these waters into artificial waterways, they know exactly how high the water may rise above this level, and even on the small rivers the highest level which the water may attain is regularly calculated and the time when the sluices or dams must be opened or closed, is ascertained. The large rivers, which are not regulated in any way by locks or sluices, are also provided with signs and symbols which have been placed along their banks by officials of the Waterstate, and on these gauges, which are distributed in a generous fashion, everyone may read how many inches the level of the water is above or below zero, which is N. A. P.

Alas and alas if the river water should rise too high above N. A. P. and reach the top of the dykes; and three times alas, if seawater is whipped up over the dykes or if the water in the polders should have risen to an undesired level, or if the latter owing to the high level of the outer water, cannot be drained; then Holland is in trouble.

A Zealand landscape.

Unless, of course, Holland purposely calls in this trouble and this is possible if the country were obliged to make use of the same water as its sole natural means of defence.

THE INUNDATION SYSTEM.— After the preceding brief description of the most peculiar type of the country we come naturally as it were to the manner in which the Dutch have arranged their defence against a possible alien invader.

It is this same water that the Waterlanders, from their very earliest national existence to the present day have considered as their most powerful ally as soon they were threatened with the danger of other nations invading their country. Yesterday our internal enemy, to-morrow our friend in need.

This country's entire system of defence is based on the low level of the Western provinces and on therefore a construction projected for the purpose of inundating part of the polders. The sluices which in time of peace protect the country against the water, are opened in times of war and the polders are flooded as far as it is required.

This submersion of the land is an extreme measure, you will understand. But it was applied with success centuries ago by various Dutch generals. Was not even Louis XIV with his enormously strong French army (for those days) of 150.000 men, obliged to halt in the face of the Dutch water line?

When, therefore, in more modern times an improved system of defence had to be made, it goes without saying that the general staff based their plans on the power of this natural ally: the water. Notwithstanding in the course of time military tactics had radically changed, the Dutch authorities considered that the inundation system should be maintained as the principal means of defence, although, needless to say, the military experts were able to adapt their general plan to the modern lessons which they receive gratis from all sides.

The original inundation system of the Netherlands consists in flooding a broad strip of low lying ground running from North to South, commencing at Naarden on the South coast of the Zuider Zee, straight through the central province of Utrecht, passing the fort of Gorinchem, between the principal rivers Waal and Maas, and stretching towards the south to Geertruydenberg, situated on the Holland Diep and the newly cut mouth of the Maas in the province of North Brabant. This territory forms the so-called New Dutch water line, and it is behind this flooded region that the Dutch armies would eventually retire if they could no longer resist an invading enemy in the northern, eastern and southern provinces. A large proportion of the country would, it is true, be sacrificed, but this would be done on the tactical consideration that a definite stand could be made behind this flooded strip of land, which is about 78 miles long and of an average breadth of 7½ miles.

The intention would not be to flood the country haphazard as was formerly done with more primitive waterworks; the system is based on an extremely ingenious arrangement of separate locks and dykes built for the purpose limiting the whole; and the water, which is artificially admitted, rises no higher than one or two feet above the submerged land. This is however amply sufficient. The object of this voluntary inundation is only that the whole district should appear as one level sheet of water. All these flooded fields are in ordinary times a network of low-lying polders, divided into strips by ditches and separated here and there by catch-water basins, in short, the ordinary type of the Dutch polder. Now if this land is all under water, one could easily wade across, as it would only be a few feet deep. But it is precisely those deep canals and ditches running in all directions, which would make such a wading trip extremely dangerous. Every hundred yards or so one would have to sink or swim.

This accounts for the answer that our Queen is said to have given to the late German Kaiser, when, on the occasion of a review of his body-guard at Potsdam before his distinguished visitor, and pointing to the height of the soldiers of his guard, the Kaiser is reported to have said: "They are nearly all six feet high", to which the Dutch Queen is said to have answered: "Then they could not enter my country, because they are just two feet too short".

The water used for the inundation would be drawn from the main rivers, the Rhine, the Waal, and the Maas, while the Zuider Zee water would also be available the latter however would only be resorted to in case of emergency. Its saltness is injurious to the fields, as was again recently seen on the occasion of the breaking of the Zuider Zee dykes in January 1916, which has already been described above, when large acres of polderland were flooded, which after being pumped dry proved to have suffered considerably from the effects of the salt water. The inundation here described is however limited to one strip of territory and they are certainly not the richest meadows and arable fields which are to be temporarily submerged.

Besides this, other measures have been planned, to render possible a second inundation, in case the Dutch water line should be forced by invaders. A large portion of Utrecht, the whole of South Holland and the northern and southern portion of North Holland would be given up so as to concentrate the last defence on the capital.

For this purpose the Amsterdam water line had been constructed, also beginning, in case of inundation, at Muiden and running in a wide circle round the capital of the country, this being the last redoubt. It is for this water line that the old Haarlemmermeerpolder has been divided into two. The southern half would, if needed, be inundated too. And as one of our members of Parliament recently both wittily and seriously expressed it, when he pointed out to the Dutch nation the incalculable consequences, which foreign events might lead to for this country: "Let us keep our powder dry and our country wet".

"Tjalk" on a canal.

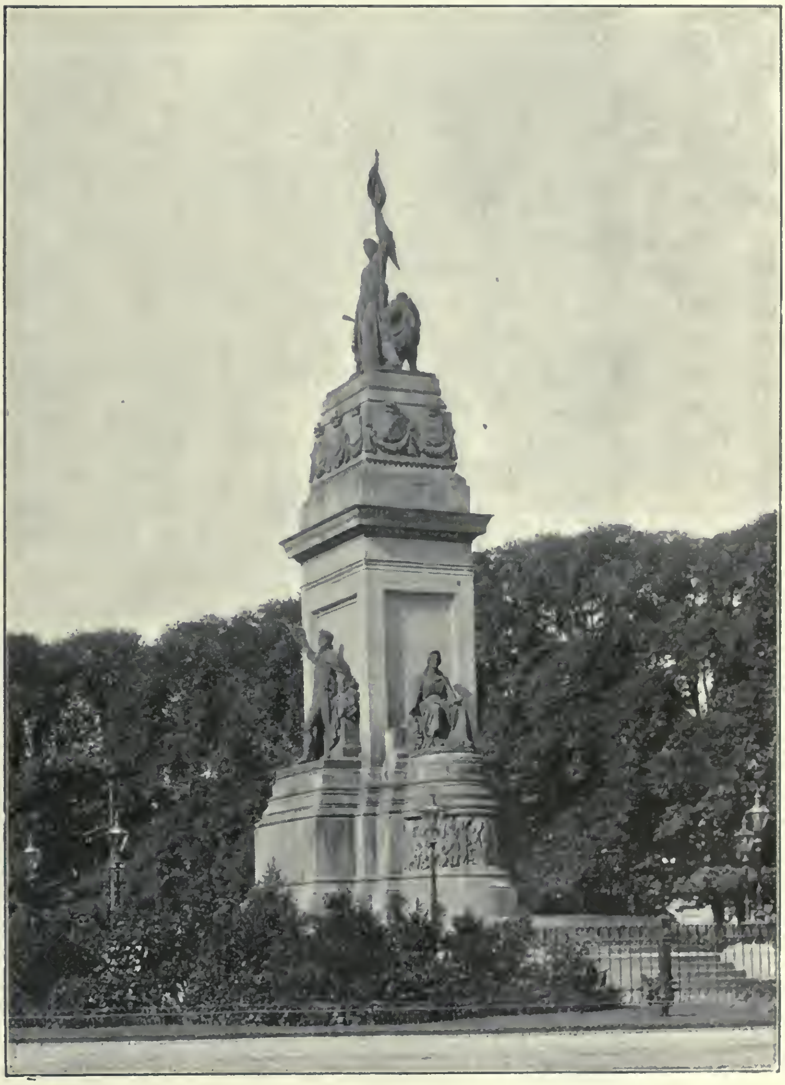
CHAPTER II – HOW THE COUNTRY IS GOVERNED.

Every nation has the Government it deserves. — The Netherlands and the House of Orange. — The High Mightinesses at the Hague. (Hoogmogende Heeren). — How the polderland is governed. — A small nation under arms.

Every nation has the government it deserves.— As a rule the question people ask is: "How is the Dutch nation governed?" but in this case the question had better be changed to: "How does the Dutch nation govern itself?"

For you will repeatedly observe from these notes on the administrative government of this country, that the Dutch people, however much devoted to their Queen and to the House of Orange they may be and however staunch adherents they are to the monarchic form of government, exhibit in their own way a strong democratic tendency. Indeed, if we place national democracy and republican form of government on the same basis, we could, with Heine, here speak of a crowned republic, or if you prefer it, of a democratic monarchy.

In the many and frequently divergent forms of government obtaining in Holland, we constantly meet with this democratic foundation, though in each of the various governing bodies we repeatedly find that one person is elected as executor and as bearer of the responsibility.



Monument commemorating the Independence of the Netherlands at the Hague.

Both in the general government of the kingdom and in the administration of towns of the eleven provinces, and even in the municipal administration of towns and villages, we recognize this democratic principle. It is the nation in the widest sense of the word which sends its deputies to the Second Chamber; the members of the Provincial States are mainly elected from the great mass of provincial voters, and the town councils are composed of members elected by the whole male and female burgherdom of the Municipality.

In this respect the temperament of the Dutch people has always remained the same, and if it is true that every nation is given the form of government which it deserves, it follows that this nation has during the last few centuries until the present day, tenaciously adhered to the system of government which had proved to be the best and most serviceable for itself, and which will probably continue to do so far into the future.

The typical period of the Stadholder's government, which everyone should look into who desires a profounder knowledge of Dutch national history than is possible from this general sketch, and the periods of government during which the United Netherlands repeatedly urged the Princes of Orange to place themselves at the head of the State as the executors of their legislative measures, are so many examples, though very divergent, of a crowned republic. And so soon as the Netherlands, after the fall of the French supremacy in Europe at the beginning of the 19th. century, were freed from the tutelage of France and were once more, as the Dutch National Anthem has it: "from alien blemish free", a King again acted as executor of a constitution which he himself had presented to the nation.

Since 1848 the Dutch nation has adhered to the constitutional monarchy as its principal form of government, a type of government which was not affected by the powers in their mutual relations instituted in State, Province or Municipality.

We shall therefore devote a few words to the origin of this form of government and then give a brief outline of what will naturally most interest a foreigner, viz. how the Netherlands are governed at the present day.

To do this it is not sufficient to trace the foundations of the kingdom, but we shall obtain a clearer view of our system of government if we go further back, for instance to the comparatively brief years of the Batavian Republic. We shall then see that a number of the fundamental principles of the modern Netherlands constitution are equivalent to those laid down by the Batavian Republic. Consequently we may say that the present monarchy and parliamentary polity arose from the republican form of government which we owe to the French Revolution of 1792, after we had had an autocratic form of government, viz. that of Napoleon (1810—1813) and that of King William I (1813—1840).

Before, however, describing the origin of the form of government prevailing in the Netherlands of the present day, I shall briefly narrate the history of the House of Orange, which is, as it were, interwoven with the political history of this country.

THE NETHERLANDS AND THE HOUSE OF ORANGE.— In the pages of this book — of which the object is to give the reader a general yet concise review of the Netherlands as they are at the present day — frequent references will be made to the past of this country. We Dutchmen cannot free ourselves from our history, for we are bound to it with bonds which we would not break, even if we could.

This is particularly the case with the House of Orange, because since the sixteenth century its members have stood by us through the many fluctuations of this country's fortunes.

The name of this House, originally a family of counts, appears in the history of the Netherlands for the first time in connection with the great war for political and religious liberty which the Netherlands of the sixteenth century fought against the then all-powerful King of Spain. A heroic struggle. And not only one, but a hundred, nay thousands of monuments and relics still remain in the small kingdom of Holland to preserve alive its memory.

King Charles of Spain, Emperor of Germany, Lord of the seventeen provinces of the Netherlands, the man who condemned Luther at Worms and whose life-aim it was to suppress and stamp out the principles of the Reformation then spreading over Europe, was the bitter enemy of

H.M. the Queen of the Netherlands.

Lutherans and Calvinists in this country. The inexorable severity of the Inquisition in the southern provinces of the Netherlands, now called Belgium, which hunted down and punised the apostates from the Catholic faith, the intolerant manner in which the Dutch aristocracy was treated by the Spaniards, the crushing oppression of this nation already so independent and liberty-loving, were the circumstances that led to an open breach in the reign of Charles' son, Philip II. It was at this juncture that a young Dutch nobleman placed himself, almost as a matter of course, at the head of the Liberty Party. His name was William of Orange — later to be known in the history of Europe as "the Silent". He was born of Lutheran parents at Dillenburg in 1534 and, owing to his possessions in the Netherlands and his marriage to Anna van Buren, he came to be considered as one of the richest nobles in the Netherlands.

When Philip, on learning of the destruction of a number of Catholic institutions, particularly in Leyden and Alkmaar, committed by the populace in a moment of bitterness, sent out to the Netherlands a punitive expedition under command of the Duke of Alva, the Prince of Orange, still being in Germany, organized a resistance which opened the Eighty Years' War (1568) After having gained some advantages and suffered no fewer reverses the people threw off their allegiance to the King of Spain (1581) as a reply to the banishment and outlawry of Orange. But before the traitorous dagger of the fanatical assassin Balthasar Gerard struck him at Delft (1584) William's brother, John of Nassau, had, by means of the Union of Utrecht, succeeded in uniting the Northern Provinces of the Netherlands (1579).

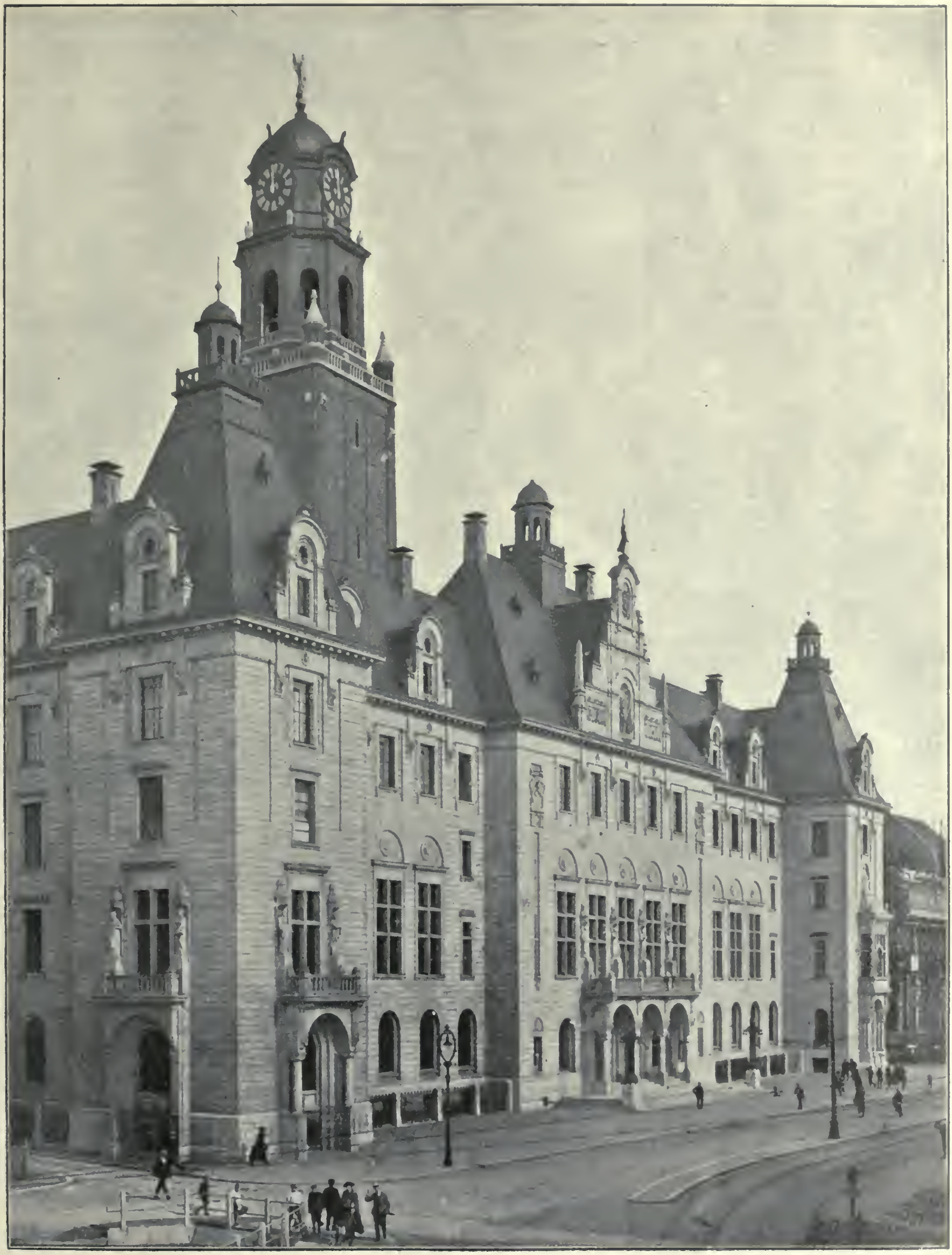
After the death of William, whose memory as "the father of the Fatherland" is ineffaceable in this country, there were other Oranges who took to heart the interests of the Netherlands in their struggle for liberty. The princes Maurice and Frederic Henry devoted their lives entirely to the country's cause. And when the Peace of Munster (1648) sealed the glorious close of the Eighty Years' War, the Oranges had for ever bound their name to the weal and woe of the Dutch people.

During the whole of the fascinating history of the Netherlands, we repeatedly find one of the Oranges acting as Stadholder, although we can also point to Stadholderless periods in the government of this country. From the death of William III of Orange in 1702 until 1747 the Netherlands, for instance, governed themselves as a Burgher-Regent State, not a less glorious period by any means, and a striking example of our typical form of government.

During the stormy years which raged over Europe during the latter half of the eighteenth century, a William IV and William V again held the stadholderate of Holland, which on the arrival of the French in 1795 was modified into a form of government — already referred to as the Batavian Republic — that entered into a treaty with France and, after the brief reign of Napoleon's brother Louis, was absorbed in the French empire.

It was not until Bonaparte's lucky star waned on the battlefield of Leipzig, and until after the débâcle of the Napoleonic armies in Russia, that the Netherlands threw off the French yoke and proclaimed the son of William V of Orange to be their sovereign prince as King William I. During the 19th. century two more Kings of the House of Orange, William II and William III, ascended the throne of the Netherlands, until in 1898, after an auspicious term of government under the Regency of the consort of the late King William III, Queen-Regent Emma, our present Queen Wilhelmina commenced her reign over the Netherlands.

Neither upon the brief interval of Napoleon's influence over Europe nor upon the French Imperial supremacy in the Netherlands need we dwell here; the monarchal principle prevailed in this country for precisely the same length of time as the French supremacy and the reign of King William I lasted and we owe to it no more than the formula, since retained in our Constitution, of "By the Grace of God" when referring to the sovereign.



The Townhall of Rotterdam.

After the year 1813, the year in which the Netherlands recovered their independence, we once more took up the historic thread of our State government by again placing, for reasons of national gratitude, a member of the House of Orange at its head, thus converting the Netherlands into a monarchy. Yet when doing so a few fundamental principles dating from Napoleon's rule were observed, whilst a great many of the benefits which the French Revolution had bequeathed to Europe, as far as the individual position of the citizen was concerned, were made use of.

This foundation has been maintained throughout our present system of governing the unified State in the form of a constitutional monarchy with a parliamentary legislature. The edifice was therefore from that time onward, not a contrast but a continuation of its ancient form, a Kingdom divided into Provinces and each province again subdivided into Communities or Municipalities.

Now it is of importance, in order properly to understand the nature of the present government of the realm, that we should trace the organization of this government in all its various departments.

THE HIGH MIGHTINESSES AT THE HAGUE. (HOOGMOGENDE HEEREN).— The official name of our Parliament is the States General ("Staten Generaal"). You will at once see from this name that even in the Kingdom of the Netherlands the name under which the National Assembly in the days of the republican government was known in this country has not been dispensed with, which shows a sympathetic tenacity and a conscious maintenance of tradition.

The Netherlands Parliament in its present form is divided into two Chambers, the First and the Second. The First Chamber mainly became of political significance when its members were brought within the sphere of influence of the voters.

The Binnenhof at the Hague.

The First Chamber consists of 50 members, elected by the Provincial States of the eleven provinces, which send up a number of representatives according to their importance, for instance the Province of South Holland has most with 10 members, while Utrecht, Zealand and Drente have least with only 2 members returned to the First Chamber. Our senators are elected for the space of 9 years and one third of their number resigns every three years according to roster; as however they are not elected directly by the voters and there is a gradual change in its members, the First Chamber does not exhibit as correct a picture of the momentary opinion of the voters as the other Chamber; on the other hand it is a distinct advantage that the members, who are elected from circles having but few political tendencies and standing outside the scope of electoral devices or election leaders, most probably represent the more permanent opinion of the nation. [1]

The vocation of the First Chamber is not a positive or an active one, but merely a negative one, because its duty is to restrain the actions of the Government and of the Second Chamber, if these should seem in their opinion to be too fraught with danger; they may however only reject the proposals of the Second Chamber or pass them without amendment.

Vijverberg at the Hague, rear view of the Ministry of the Interior.

The Second Chamber on the other hand, numbering 100 members, who are directly elected by the voters and who resign en bloc every 4 years, forms the assembly which in this country is considered to represent as accurately as possible the opinion of the voters of the moment and which therefore at the same time determines the direction of the ship of state.

The voters for the Second Chamber are, with the exception of women, who are still precluded from suffrage in the Netherlands although they are themselves eligible to membership of the Second Chamber, [2] all classes of the male population, so that according to the latest Election Act a form of suffrage is applied which is not far removed from general suffrage. Since 1895 the number of male voters has increased from 300.000 to 1.000.000 (on a total population of ± 7.000.000 souls) at which figure it stood before the most recent expansion, which is due to the repeated extensions of the Suffrage Act. The debates held in the Second Chamber towards the end of 1916 with reference to the introduction in the Netherlands of general suffrage were of such great importance, because. this new expansion of suffrage has given to the lowest masses of the people the right to join their brethren at the poll. The electorate has thus been extended to a number of about 1.400.000 votes. In this connection mention must also be made of the "Raad van State" (Privy Council), the oldest of the Netherlands State institutions. It was founded under Charles V in 1531 and made permanent by Prince William of Orange in 1572. No act of parliament, nor any Royal Decree or Order in Council can be enacted without the co-operation of this Council. In certain cases the Privy Council is even vested with Royal Power.

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[1] It is doubtful whether this may be taken as applicable to the future, as the conditions of elegibility for the First Chamber have, by a change in the Constitution (1917), been made like those for the Second Chamber.

[2] Since the above was written, Female Suffrage has become an accomplished fact.

HOW THE POLDERLAND IS GOVERNED.— I cannot however conclude the enumeration of the governing bodies and officials of the Kingdom of the Netherlands, which perhaps do not differ so greatly from similar foreign bodies, without making mention of another government institution whose parallel will not be found in any other country in the whole world; I mean the water conservancy or "watership" as it is called, with its variants "fenship" and "polder". What a polder is has already been explained in the first chapter of this book; but the polder or water conservancy Board is a separate body which seems to belong to this chapter because it exercises a governmental function of no slight importance.

From the old adage "Wie het water niet keert, is het land niet weerd", (¹) we see that it was considered a national duty to keep out the water; the water was kept within bounds by means of dykes and locks and the people gained land by reclaiming it and poldering it in. The first could only cost money, although this expenditure was inevitable, but the second might produce handsome profits. It therefore goes without saying, that keeping the water off the land is to the public interest; both the State and the Provinces often throw themselves into the breach under the supervision of the government or provincial "Waterstaat", or Waterstate, when the construction or repair of expensive works is necessary. But the landowners and other parties interested in the land continue to form a kernel of our "Waterstate" legislature and it is the "Heemraadschappen", "Hoogheemraadschappen" and other Waterships, composed of the landowners who have a certain interest in the state of the water in their properties, either by reason of keeping it out, the draining or the supply of water, who form as it were a small government of their own which has hardly anything to do with the provincial or municipal council, although the interests of these two are sometimes involved. In its own territory viz. the water conservancy, the organisation possesses supreme powers and if we study the history of the Dutch polderland we shall understand why the powers of these water conservancies have come to be considered as almost divine rights in this country. One could almost assert, that the popular saying: "to burn one's self with cold water" must have referred to the many thorny questions connected with the water conservancies.

A SMALL NATION UNDER ARMS.— One could never look upon the Dutch people as a military nation, even though this country has waged innumerable wars throughout the centuries against many European nations in turn. For this was not done with bellicose intentions, nor was the country's army urged by prospects of conquest; what Holland possessed of European territory it has been able to retain and the country never suffered from land hunger. Whenever this country was forced to fight for its existence, its inhabitants made a stubborn stand both against human beings and against the elements, but none of

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[1] "He who does not keep out the water, does not deserve the land."

the numerous Dutch wars was ever characterized by a desire for expansion of territory.

This small nation had sufficient land at its disposal in its by no means extensive country and moreover it possessed adequate opportunities for expansion in its Colonies which, if we take the East and West Indies together, cover an area equal to 62 times that of the mother country and which possess 6 times its population.

The armed forces which the Netherlands have maintained in their modern form of government have possessed however, from the very first, the character of a standing army exclusively devoted to the country's defence and never intended to serve for any aggressive purpose. The Colonial forces, which were organized as a separate military system and kept apart from those of the mother country, were given a similar task, viz. to be prepared fully and completely for the defence of the Colonial territory and not to be used for any offensive purpose whatever.

Troops passing over a pontonbridge laid by the engineers.

As a matter of fact it is the earnest intention of the Netherlands' policy to maintain a standing army at the disposal of the country in case the country's frontiers should be violated, and although it may be considered as sufficiently known, I wish to repeat here, that the Dutch idea of independence is synonymous with its strict notion of neutrality. Whoever is acquainted with the Dutch people and their responsible statesmen will know that this, at the bottom antimilitaristic nation, has no other end in view for the so costly maintenance of its army than to maintain its neutrality, if necessary by force of arms.

It is therefore this defensive character which must be kept in mind when considering the fighting forces of the country, but even when considering its permanent means of defence, it will strike the observer how the whole system has been made with a view to repulsing an attack on the Netherlands independence from whatever side it might come.

This system of defence, as far as the permanent fortifications are concerned, therefore justifies, from more than one point of view, the separate attention which I devoted to it in the first chapter.

As long as the war lasted the Dutch had a well armed, well equipped and well trained army ready to defend the neutrality of their territory. Towards the end of the war Holland disposed over a reliable armed force of about 600.000 men or roughly 10 % of the entire population of the country.

Once the war over, the people of the Netherlands, fully aware of the necessity of economizing and under the influence of the League of Nations idea, demanded that their Government should reduce the military expenses as much as possible.

The new system of organisation which was proposed by Minister Pop according to this demand, could however not obtain a majority in the Parliament. The members of the extreme right were of opinion that the carrying out of the project would mean too much weakening of the forces, whereas the left wing of the Chamber thought it even too militarist still. The opposing parties — each for their own reason — joined in voting against the bill and proving too strong for the centre, which was in favour of Pop's system, it fell through.

Pop's successor, minister van Dijk, has submitted to the Second Chamber a new system of organisation showing several alterations of Pop's project, which are evidently the result of careful consideration of the political mentality of the Parliament.

If this project were to be carried out — and it certainly has a fair chance of success — the Dutch military system would be based on the following principles.

The bulk of the (Home) Army consists of militia. The militia-system is based on the principle of personal, but not general conscription. Professional officers and N.C.O. 's are charged with the training of the conscripts, whose rights and duties are regulated by the "Military Service Act". The Act prescribes, that every year by means of drawing lots a certain number of youths of an age suited for military Service and who are not already serving, or exempted by reason of service of a brother, must be drafted into the militia.

The number is fixed at 19500. The first period of service after enlistment is 5½ months for the unmounted troops and 18 months for the mounted. During the first 4 months of their training (individual training) the recruits of the unmounted troops are brought together in barracks, the last 6 weeks the training (in larger units) is done in camps. By undergoing a preliminary training before the "military age" it is possible for every conscript, belonging to the unmounted troops, to escape the time in the barracks. If — by passing an examination — he can prove that he has been trained sufficiently, he is supposed to be on a level with the "raw recruits" after 4 months training and he has only to serve the last 6 weeks in the camp. Within 6 years after the first period of training the men have to come back twice for a short period of training. The two periods together may not exceed 40 days.

The conscript is released from military duty on October 1st of his 40th year.

The organisation of the Dutch field army for war-time contains 4 corps each of two divisions. Every division consists of 3 regiments of 3 bataillons. The army is to be well equipped with artillery, reconnaissance-troops, engineers, supplytroops etc. etc.

The Dutch Navy, which — according to captain Mahan — has, together with the British Navy the most glorious history, has lost since the days of "de Ruyter" en "Tromp" a great deal of its importance in the world. The competition in armaments, that always asked for bigger and more expensive battle-ships could not be kept up by Holland.

The Town Hall at Gouda.

Yet this country always had a relatively powerful navy and will always need it both for the defence of its territorial waters and for the defence of its colonial empire of islands that extends from Singapore to Australia.

Till a short time before the war, the main part of the Dutch fleet was formed by smaller ironclads of not more than ± 6000 tons, armoured cruisers of about 4000 tons, destroyers, torpedoboats and some submarines. With the great development of the Indian colonies, the cry for a Dreadnought Squadron, especially for the defence of those islands, became stronger and stronger and the Government was on the point of making proposals by which the creation of such a squadron should be provided for when the great war broke out, which postponed the realisation of those plans.

During the whole war the fleet was mobilized in its full strength, and it has done most important work in maintaining our neutrality, both in the territorial waters, situated in the centre of the war at sea and in the colonies. During those years the navy was only increased by smaller craft, such as submarines, mine-crafts, torpedoboats etc. while a modern naval air force was created.

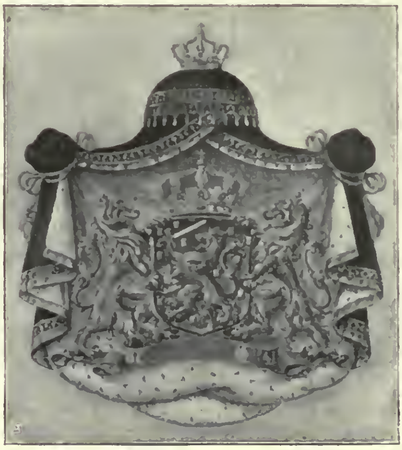
After the war the Government again carefully considered the question of naval defence. A naval budget containing proposals for new building for the next six years, both for Holland and for India, has passed the "Volksraad" and will be soon presented in the "Staten-Generaal". In the period above mentioned there will be added to the fleet two fast cruisers (already in course of construction), a dozen first class destroyers and about 18 submarines. The number of naval air craft, especially in the East Indies, will be greatly increased.

The principal naval base in the Netherlands is Helder, situated at the north point of the province of Holland, while in the southern part of the country Flushing and Hellevoetsluis are secondary bases.

In the East Indies Batavia (Tandjong Priok) will be the principal base, Sourabaja and a place in the Riouw-Archipelago are secondary bases.

The Dutch coat of arms exhibits a lion rampant holding in one paw a bundle of arrows, the symbol of the United Netherlands' provinces, and in the other paw waving a sword aloft — which perhaps could be looked upon also as a symbol — as the motto of the Dutch royal house is:

"Je Maintiendrai" (*I will maintain*).



The Arms of Holland.

CHAPTER III – SOMETHING ABOUT OUR SPIRITUAL AND SOCIAL LIFE.

Spiritual and social movements.— Education. — Something about sport.— About our relief of the poor. — Some pages on the feminist movement

SPIRITUAL AND SOCIAL MOVEMENTS.— The entire spiritual and social life prevailing in the Netherlands during the Middle Ages bore the stamp of the Church of Rome. It was especially in the remote polder-districts of Friesland that it met with opposition at an early period, as was experienced by the well-known Roman Catholic orator Brugman during his expeditions. Towards the year 1500 Wessel Gansvoort of Groninguen acted as pioneer of the Reformation, whilst his comtemporary, the world famous Erasmus, severely censured the clergy by his satires.

Luther found from the very outset adherents in the Netherlands. But among the population of numerous Dutch towns, with their strong republican tendencies, the doctrines of Calvin had much greater success. It was the Calvinists who began the struggle for liberty against Spain and who in that struggle proclaimed their church the State Church. To all otherwise minded people church-service was then prohibited. For all that, they did not go the length of persecuting or expelling the latter. All religious sects, with the inclusion of the Roman Catholics and the Jews could freely remain in the country and retain their creeds. Especially in the commercial cities they were even connivingly allowed to assemble in out-of-the-way buildings for holding religious meetings. To-day we can still find such humble churches hidden behind dwelling-houses in various Dutch towns, particularly in Amsterdam and Rotterdam. Among them are Lutheran, Roman Catholic and Jewish churches, also those of Remonstrants, who had been banished from the State Church for their liberalism, as well as of Mennonites, the followers of the Frisian reformer Menno Simons. Such churches bear witness that the Netherlands of the seventeenth century had more freedom of thought and speech than any surrounding country. They were famous as the refuge of freethinkers, such as Cartesius, Locke and Bayle, and suffered their own countryman Spinoza to live freely at the Hague, where the first Dutch Statesman, Jan de Witt, not seldom visited him in his humble dwelling. Free investigation in the domain of natural sciences was pursued here by generally noted scientists as Huygens and Leeuwenhoek. Small wonder that towards the end of the eighteenth century the principles of the French Revolution were largely advocated in this country. In 1795, shortly after the French had been welcomed here, the Low-German Reformed Church, then being the State Church, was deprived of its privileges, the freedom and equality of all religions was recognized and mainly carried into practice. After the fall of Napoleon's rule the first national king, William I, of Orange-Nassau, thought it his duty to attend to the spiritual interests of his subjects. He laid down rules for the Low-German Reformed Church and also exercised his influence in all other Protestant denominations as well as in the Roman Catholic and Jewish Congregations.

All this was generally and eagerly approved of by the Dutch nation, who worked hard and used to sing national hymns such as "Wien Neerland's bloed," then composed by the poet Tollens.

When however the Belgians, who were rather displeased at the government, renounced their allegiance to the King in 1830 and the following years, dissatisfaction was also manifesting itself very soon in Holland proper. First the "Reveil" (religious revival) of the rigid Protestants came to resound in the poems of Bilderdijk and Da Costa. Then followed the separation of a number of members of the Low-German Reformed Church. They were persecuted and worried for some time, so that part of them migrated to America, where they founded the towns of Holland and Zeeland.

In the Roman Catholic Church, too, opposition began to arise. But after 1830 it was especially the desire for greater economical and political liberty, much more than religious tendencies, that was coming to the front. And no wonder, for that desire had from olden times been prevalent in this country more than anywhere else, and from an economic point of view more than in England even. Shortly after the rebellion of the Belgians the first steps were taken in the direction of free trade, at the same time when this was done in England, with which country Holland has kept pace later on as well. The political strife for complete liberty of speech and a parliamentary polity was led by the famous statesman, philosopher and historian Thorbecke, who was a contemporary and admirer of Gladstone. We largely owe it to him that, unlike France and Germany, the movement for spiritual liberty of 1848 had permanent results in this country. Born as he was of a lower middle-class family he has laid the foundations of democracy. His electoral system, though far from being general, left room for extension, but his prediction that it would be general towards the end of the century did not altogether come true. This was not realized until 1918.

The newly established liberty was eagerly accepted on all sides. In the universities we then find theologians following Spinoza in their free criticism, Kuenen and Tiele in particular were known all over the world.

Philosophers, too, held lectures there, and practised novel critical-empiric methods. Best known among them was Opzoomer but their number was not large. Of the principal-historians; we mention Bakhuyzen van den Brink and above all Fruin, who with great talent cleared the records of national history, down to his time, of the cobwebs of tradition.

The spirit of free investigation found the greatest success in the field of natural sciences. The chemist Mulder, the ophthalmologist Donders and the physicist-meteorologist Buys Ballot won a world-wide reputation. After them came new celebrities, such as the chemist Van 't Hoff, the physicists Lorentz, Zeeman, Van der Waals and Kamerlingh Onnes, the botanist Hugo de Vries and the mathematician Kapteyn (also an astronomer of this name). Most of them are still living stars and have been distinguished by Nobel prizes.

The tendencies towards criticism and free investigation prevailing in the latter half of the nineteenth century here led, as elsewhere, to a spread of rationalistic ideas and also promoted materialism, which in fact had always been a special feature in a commercial country like ours.

As a matter of course the rigid believers opposed this movement. They

Interior of the Cathedral at Bois le Duc.

The Peace Palace at the Hague.

especially feared the influence of the public elementary school, providing for national education since an act of 1806. The strife was initiated by the "anti-revolutionists" (Calvinist conservatives) under the leadership of the famous statesman and historian Groen van Prinsterer. In 1857 they secured the liberty of the denominational schools. But they wished much more, they demanded equal rights, at least financial support from the State.

It has taken them a long time to realize this desire; they did not obtain financial equality until 1918. In the meantime a "schoolcontest" was carried on, longer and heavier than was known in any other country.

The Roman Catholics have naturally not failed to play their part in it. After they had established an entirely episcopal organization under the first ministership of Thorbecke in 1853 they continued to act conjointly together with the liberals until they joined hands with the anti-revolutionists.

The new State and municipal secondary instruction created by Thorbecke in 1863 and especially leaning to the natural sciences was a great vexation to them. It was Dr. Abraham Kuyper who eventually succeeded in founding a firm coalition between Anti-Revolutionists and Roman-Catholics. On the revision of the University-Education Act in 1876, when the Low-German Reformed Church was not separated from the State universities, he instituted a "Free University" at Amsterdam. And when the disciples of this university were not appointed in the church he erected a new congregation that was afterwards united with the Dissenters of 1857 into the Reformed Churches.

With these and other organizations he acted so intensively, that throughout the country a phalanx of staunch Calvinists was formed, setting out on a hard fight against the rule of the public elementary school. Modern traffic, instruction itself and the press served as substantial means to this purpose. Yet it was not before 1888 that the united clerical parties obtained a majority in Parliament. It was only then that through the revision of the constitution of 1887 the franchise was considerably extended and that the classes most influenced by the clergy also obtained the right of voting. Their majority was not however great nor of a long duration.

This was partly due to other movements, both democratic and social, which I shall now discuss in a few words. The liberals, who in Thorbecke's time were mainly found among the well-to-do classes, had already been acting in this direction from 1848, when the Dutch colonies were brought under the administration of Parliament.

Already then the social relations in the Dutch Indies under the system of State exploitation with compulsory labour were complained of. Thus the social question was first broached as a colonial problem. In 1860 Eduard Douwes Dekker, a talented author, called general attention to the outrageous exploiting of the natives by his passionate pamphlet "Max Havelaar" and reforms were strongly insisted upon ever since. In 1863, at the same time when slavery was abolished in America, Thorbecke only wanted to promote the abolition of ordinary slavery. There were, however, liberals who under the leading of Fransen van de Putte wanted to go much further, and this gave rise to the first great split in the liberal party.

In 1870, not long before Thorbecke's death, it was decided to do away with all State exploitation and forced cultures gradually, so that Holland followed other nations in the direction of more liberal administration of the colonies.

Meanwhile Multatuli (pseudonym for Eduard Douwes Dekker) proceeded with his protests against various social principles and institutions, also in Holland itself. Others, too, shared his criticism, thus eventually rousing the Dutch labourers, who had long lagged behind those of neighbouring countries where the large industries had been extant for a long time past.

A few members of the liberal party now gave an impulse to the creation of the first national labourers' organization, the General Dutch Union of Labourers, in 1871. But the great majority, who stuck to the principle of "laisser faire" and were frightened at the meeting of the "International" at the Hague in 1872, would not hear of emancipation of the labourers. Hence it was that new discord arose in the liberal party.

Soon after the labourers were taught the new gospel of class-war by socialistic preachers, first of all — how typical in this country — by a former clergyman F. Domela Nieuwenhuis. Their success was not great at first, but increased in course of time, particularly during the economic depression after 1880. In 1888 the leader Domela Nieuwenhuis was elected a member of Parliament, but he gave up his seat very soon.

Meanwhile the democratic and social tendencies in the liberal party made rapid progress, and it was due to this progress that in 1891 the liberal party again took the lead and retained it until 1901. They first introduced an incometax, then an extension of franchise, followed up by some important social laws, as a State-insurance against accidents, for which we are chiefly indebted to the minister Goeman Borgesius. It was not until the twentieth century that the clerical parties obtained once more a majority in Parliament. Especially under the influence of Dr. Kuyper and the Roman Catholic priest D. Schaepman they had in their turn met the democratic movement and established some national labourers' organizations. Social democracy that under the leadership of Mr. P. J. Troelstra, L. L. D. had acquired only a few seats in the Second Chamber, appeared to be a very strong movement outside Parliament. It had already instigated many a strike and managed to carry through a general railway-strike in 1903. The fact that many Roman Catholic and Anti-Revolutionary workmen participated in it weakened the position of the Kuyper-ministery. Hardly any social improvements were made and in 1905 the clericals were left in a minority again.

The liberals, however, had now to be partly supported by the social democrats. This went on for some years, but at length they were practically absorbed by the clerical movement, so that their reign seemed to have come to an end.

Yet in 1913, a short time before the outbreak of the Great War, we had once more a liberal cabinet. This was principally the result of the strong current towards freedom of trade. This ministry conducted Holland through the many hardships and troubles of the war and managed to accomplish universal suffrage and the termination of the political school-contest.

In 1918 this ministry had to give place to a moderate clerical cabinet, representing the now predominating rigidly dogmatic movement, and at the same time leading the democratic and social currents in this country.

It has already been found disposed to introduce labour insurance and to regulate woman suffrage.

The more religious tendencies of modern times have been felt not only in politics but also in philosophy, being pursued in this country to a wider range than ever before, and in the study of theosophy. Further on in this book it will be seen how the above tendencies have also influenced art and literature. Of the many talented writers and poets special mention must be made of Dr. Frederik van Eeden, who has also played a part in the social movement and has won a name for himself abroad, especially in America.

EDUCATION.— The long-lasting school-contest has not a little harmed the development of education in Holland, though for all that it is not in any way of a low order. It has only lagged behind that in other countries such as Switzerland, Denmark, Norway and Sweden, where this struggle was however far less keen. But on the whole Holland can challenge comparison with all other countries of Europe.

In a population of 6 3/4 millions, over 34.000 male and female teachers were engaged in elementary instruction in 1917, with a number of over one million pupils. Taking into consideration that compulsory attendance comprises only six years these numbers are very large. Of analphabetes we find hardly any at present. Their number among recruits has decreased from 18.2 % to 0.6 % since 1865.

Among 5800 schools nearly 3400 were public elementary schools. In part of the schools the French language has been one of the school-subjects. Besides there are a good many schools where pupilage lasts till the fifteenth or sixteenth year of age and where the English and German languages are also taught.

Secondary instruction, given in the "Higher Burgher Schools" (secondary schools) instituted by Thorbecke, has in the last 25 years been extended from 61 schools with about 6000 pupils to 93 schools with more than 16000 pupils. During the 50 years of its existence it has yielded a great many suitable workers to trade and industries and trained hundreds of young people for the study of engineer, doctor, technologist etc. This is due to the fact that it mainly comprises instruction in mathematics, physics, etc. and in three modern languages by the side of the mother-tongue. In recent years a considerable number of secondary institutions has been established with special education for trade industries, navigation, agriculture, horticulture, fishing and other vocational instruction. They are steadily on the increase like the general secondary schools.

The Gymnasiums, a continuation and extension of the former Latin grammar schools, have not so considerably increased, yet they have developed in the last decade from a number of 40 with 3500 pupils to 49 with about 5000 pupils. They have from the outset prepared for all branches of study in the universities and at present also for various other colleges. These who come from the above mentioned secondary schools, however are not admitted as yet to the study and the possibility of taking their degree in the Literature, Law and Theology faculties.

The five Dutch universities are in a flourishing state. In 1917 they numbered over 5000 students in all, including about one thousand lady students. Those at Leyden, Utrecht and Groninguen are State universities, that at Amsterdam is municipal, while the latter town is also the seat of the said Calvinistic "Free University", founded by Dr. Kuyper. All of them have five faculties, viz. Theology, Law, Medicine, Mathematics and Physics, Literature, with the exception of the Free University, which has not yet instituted a faculty for Medicine. At the

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A special Technical College is established at Delft for engineers and technologists, where as many as 1400 students follow lectures.

A private Commercial Academy has recently been instituted at Rotterdam, whilst Utrecht besides its university possesses a Veterinary College. The Dutch Agricultural Academy is established at Wageningen on the Rhine near the town of Arnhem. In recent years quite a number of Popular Universities have in rapid succession arisen in the towns of Amsterdam, the Hague, Rotterdam, Utrecht and Arnhem, which have at once attracted thousands of attendants.

Another feature of the general longing for knowledge is the rapid springing up of institutes for teaching by correspondence, after the American example.

University at Groninguen.

Public libraries, too, have lately gained in importance. The Royal Library at the Hague, which has existed for a long time past, now possesses more than a million books, pictorial works, etc.

The University Libraries, also dating from a long time past, afford free admission to any one. Everywhere people have the run of the libraries founded by the "Society for the Benefit of the Public".

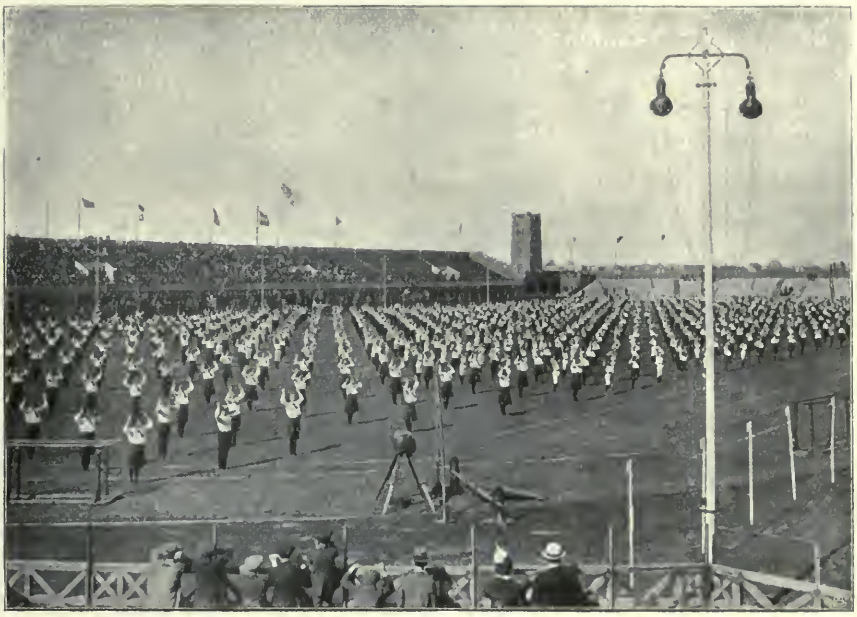
At present there are also some new public libraries established at Rotterdam, Amsterdam, the Hague, etc. all being much frequented though they are not in the same grand style as the American libraries.

The general administration of education in Holland rests with the government. A special Ministry has recently been instituted for this purpose, which promises great plans for reorganization. In particular vocational instruction will be regulated, which has already been generally furthered by the industrial schools, etc. Commercial education, of so much import in a country like ours, will be managed separately.

For Fine Arts, which will be treated in another chapter of the present book, several schools and academies have been founded in this country, only part of which are official institutions. The private Company for the Promotion of the Musical Art has successfully cared for the creation of schools of music.

Education in Holland, as outlined above, is in general as many-sided as anywhere else, though on all sides it leaves room for extension and enlargement, whilst the various institutions particularly might open their doors to a still wider range than heretofore.

SOMETHING ABOUT SPORT.—Sport will be soon considered as a part of compulsory education in Holland. Some time is officially reserved for gymnastics in the school time tables, but only at a few schools the various forms of athletics are duly instructed and pursued. Of late years however the government has appointed inspectors for supervising physical education in our schools. The government has also recently instituted an Advisory Board for physical training, which speaks for the Government's interest in the physical education of our youths. Much is done in this direction by the organization of the Boy-scouts, in which organization Prince Henry, takes an active and leading part. But though in Holland sport is not officially regulated by the State, yet it plays an important part. A number of facts could be cited to prove that our Dutch sporting men have seen their way to distinguish themselves at matches abroad in all branches of sport. The general practising of sport in this country itself has also continually increased; it is during the last twenty-five years that the organized branches of sport have come to the fore, due to the strenuous efforts of various sport-leagues, each of which is trying within its own sphere to bring their particular branch to full development. Consequently it may be said that the firm footing which sport has acquired in our country forms a guarantee that also in the future sufficient physical training, which stands for health and happiness, will be given to the rising generation.



The Stadion at Amsterdam.

At the head of the general sport-movements are two corporations, viz. "the Netherlands Olympic Committee" and the "Physical Education League".

The latter tries to propagate physical education amongst all classes of the nation by organizing courses and appointing instructors, preferably recruited from the schoolstaffs and the gymnastics-teachers. Also to the army it extended its activities; this task however has for the greater part been taken over, successfully by the army-authorities themselves, since the mobilization of the Dutch army in 1914.

I want to draw special attention to an important experiment made by this league, because better than all arguments, it shows what place sport has attained within the Dutch nation. A group of 6000 soldiers, young men of all ranks and stations, of an age of about 20 years was selected. On trial it appeared that only 30 % could swim and about as many could be considered as good horsemen. On the other hand 80 % were skaters while 90 % proved to be skilled cyclists. Over against this stood the unfavourable figure of only 20 % for gymnastics and about an equal percentage for light athletics. The other branches of sport only counted a few percents of pursuers. It is remarkable that especially those branches of sport that might be termed "transport-sports" count most followers. Of course skating is still considered a national sport. One severe winter and you will hardly believe your eyes when you see how practically the whole of our population stands on skates to make use of the unique opportunity afforded by this flat country with its network of canals and ditches, rivers and lakes.

That cycling too has become so popular in this country must be put to the account of the favourable condition of the roads, which hardly show any hills, so that cyclists have no climbing to do. Moreover special attention is being paid, not only by the public authorities but also by the "Dutch Tourists League" to the construction and repair of roads and paths.

For the rest, the other sport-leagues are still busily engaged on furthering the general physical education of the Dutch nation: in these efforts football takes the most prominent part as a popular sport. The Dutch "Olympic Committee" has taken a great task on its shoulders; this body has to be considered as a conglomeration, a sort of parliament of all the organized branches of sport pursued in Holland. The Committee was founded as a result of the success of the Olympiads abroad.

Sailing match in Holland.

Our country was represented in all places where these universal sporting contests were held every other four years, after the first had taken place in Athens, by various groups of sport champions competitors as well as sport-officials, the latter applying themselves to the study of the various branches of sport and games played in various other countries. When the wellknown French sport promoter Baron Pierre de Coubertin, visited our country in 1912, the Dutch sportsman F. W. Baron van Tuyll van Serooskerken, gave the impetus to the foundation of this gradually growing central sport-organization. The object of the "Olympic Committee" is to promote sport in a general sense and to encourage physical education as much as possible. Nearly all large sport-leagues in the Netherlands joined, and in this way it became possible to execute a program which contained i. a. awarding badges and certificates of proficiency to the so-called "debrouillards", this in connection with the ages of such "all-round" sportsmen. Thus Holland was the first country in which a woman, Miss Crena de Jongh of the Hague, acquired a certificate of proficiency. Space does not allow me to give a survey of the various branches of sport, some of which are some ages old and have served as an example to the rest of the world.

I shall finish with an enumeration of the principal branches of sport pursued in Holland and which, thanks to the organizing work of the respective leagues, have been grounded upon a proper basis. They are: Athletics, Automobilism, Aeronautics, Bandy, Base-Ball, Basket-Ball, Bowling, Boxing, Cricket, Cycling, Fencing, Fishing, Football, Golf, Gymnastics, Hockey, Horse-racing, Hunting, Kolf (not the same as "Golf"), Lawntennis, Rowing, Sailing, Shooting, Skating, Skittles, Swimming, Wrestling.

ABOUT OUR RELIEF OF THE POOR.— It is one of the characteristics of the Dutch, dating from olden times, that they have always been trying to improve the lot of the destitute as much as possible. The large number of centuries-old hospitals, almshouses and benevolent societies in various towns may bear witness of this. The almshouses mostly founded out of large donatiens and bequests are very typical. They offer cheap dwellings and other benefits to people with scanty means. Officially the relief of the poor has been regulated by an Act of Parliament of the year 1854, which was materially revised in 1870 and later years. According to the new regulations charitable institutions are considered to be those which find their permanent object in affording in- and outdoor relief to the poor. They are distinguished as official institutions, such as State-, Provincial- and Municipal institutions, further the denominational institutions, and the institutions regulated and managed by private people and finally those of a mixed character. Officially the relief of the poor is left to the religious or private institutions. The public boards of guardians are only then entitled to grant poor relief when they have ascertained that the man or woman in question cannot possibly obtain the same from a denominational or private institution and in the case of absolute unavoidableness exclusively.

Interior of an almshouse for Women.

Yet we may say that about 45 % of the cases of relief granted has of late years been resting with the public authorities, 41 % with the denominatinal and 14 % with the private institutions. The number of officially recognized charitable institutions in Holland is about 6000; and a round sum of between 7 and 8 million gulden is annually expended on poor relief. In the difficult years of crisis during the war this amount has considerably increased, of course; however official returns on this point are not to be had as yet.

Great care is taken of the tending of lunatics according to the latest principles on this point. The State possesses some lunatic asylums, such as the one at Medemblik in North Holland. The Society for Christian Tending of Lunatics has charge of four large asylums.

Various provinces have their own lunatic asylums where poor patients are received for the account of the municipalities with a subsidy from the State and the province. Some towns, such as Rotterdam, have a municipal asylum.

CHAPTER IV – IN THE REALM OF DUTCH ARTS AND SCIENCES

Modern Dutch painting.—Sculpture and architecture during the twentieth century.—Our art institutions.—Belles-lettres and journalism.—Our modern music and theatre life.—The realm of learning: theology, jurisprudence, medical science, physics and mathematics, astronomy, mineralogy and geology, botany and zoology, chemistry.—Classic literature.—Literature and history of Holland.—Our archives.—Dutch libraries.

Modern Dutch painting.—In foreign countries we often hear the opinion expressed that our country has only its products of painting to fall back upon to establish international fame. The present chapter may serve as a striking proof to what extent Holland may challenge comparison with other countries in all other provinces of arts and sciences. The fact that Dutch painting of all others still takes a foremost place in the interest of foreigners may be considered a pleasing phenomenon, — yet it is by no means the proficient and learned followers of all those other groups of Dutch arts and sciences who are to blame for this one-sided notion.

Let me first take our modern school of painting in this chapter.

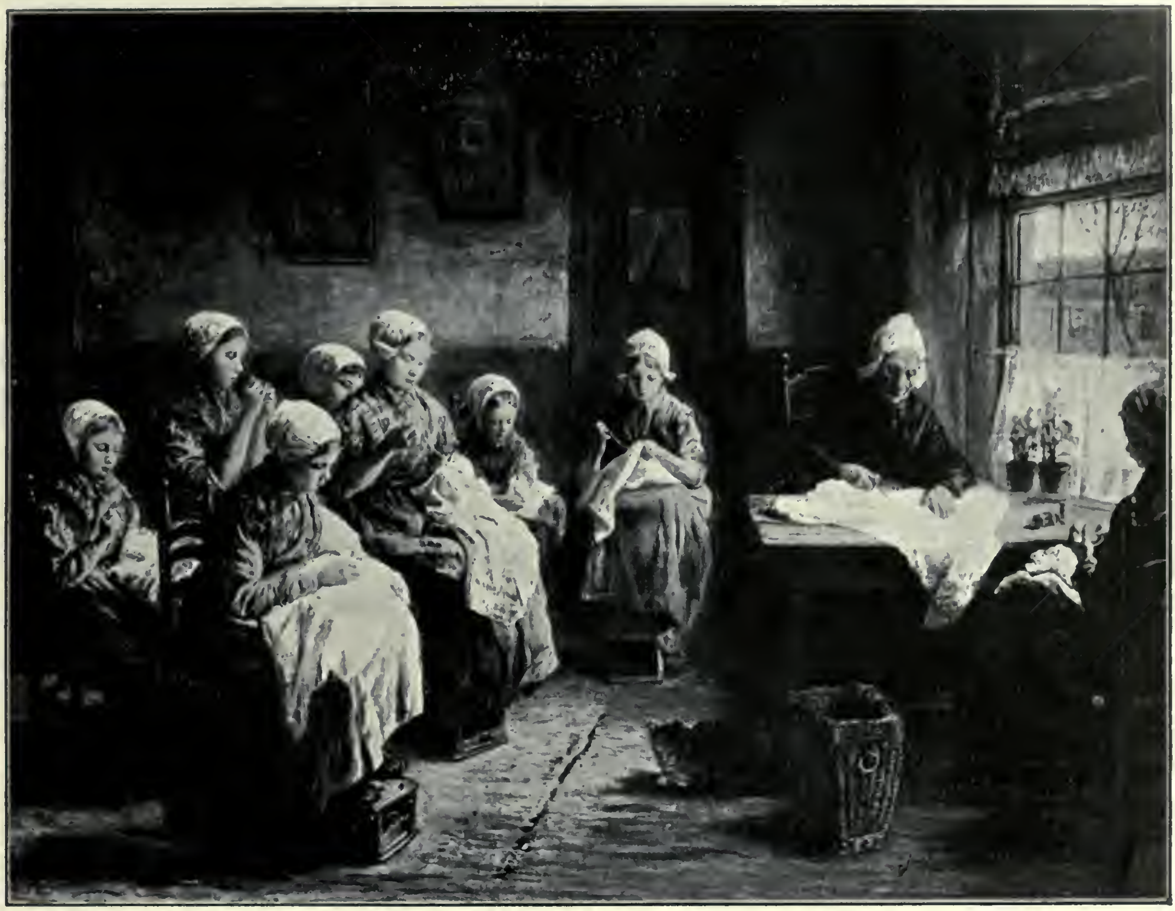
It cannot be denied that our modern school of painting was first to demonstrate abroad a second stage in Dutch artistic creative power. The first stage, the great painting-period of the seventeenth century, may have left its mark on the past; this book treats of Holland in the present day, — and consequently I must only give an outline of Dutch painting as it appears to-day.

Hence it is out of place here to remind the reader of the great Dutch Renascence period in the seventeenth century a time eminently glorious in the history of this country. Nor shall I consider, as this would lead me too far, the relationship existing between that illustrious period and the so-called "Hague-School" of the latter part of the nineteenth century. The influence of Rembrandt and his immortal fellow-artists has been great at all times and may be traced in modern Dutch painting. Recent Dutch painters are, no less than their predecessors of Rembrandt's time, masters of keen observation, sensitive colorists, excellent craftsmen, susceptive interpreters of atmosphere, of that peculiarly Dutch atmosphere, which is a direct outcome of our damp sea-climate that causes colour and shape to blend as it were.

It was the notable influence of the great English and French masters in the last century to which the revival of our present art of painting has partly to be ascribed. A number of Dutch painters, on whom ever since universal artistic interest has been focussed, could thus acquire their complete development. I think of the names of the three brothers Maris, of Weissenbruch, of the heath-painter Mauve, of the sea-painter Mesdag, of Gabriël, de Bock, Bosboom, Neuhuys, Blommers and so many others, together building the great generation that within a lifetime won anew for our national school of painting international fame, at the same time rigorously preserving its original Dutch character in all its works of art. As the best known representative of this group may be mentioned Jozef Israëls, who as he advanced in years ever knew how to fascinate with fresh shapes and tones from his untiring brush. At his decease in 1912 we may reckon the number of pioneers of the modern Dutch school to have been practically rounded off.

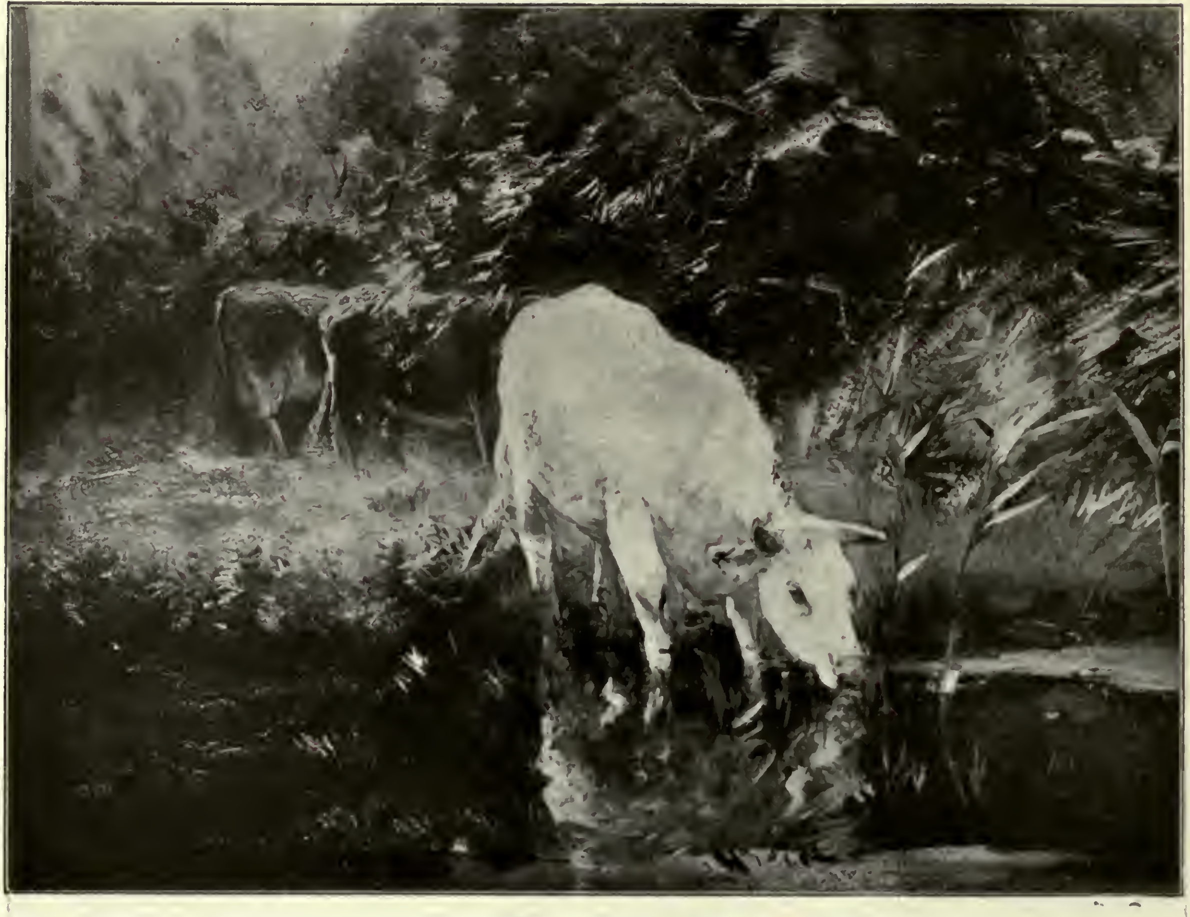
Partly as disciples of these eminent predecessors, partly formed under the influence of an impressionistic, open-air mode of painting such as of the Frenchman Monet and the Spaniard Goya, — or would it be necessary to go back as far as the free-handed style of our own Harlem painter Frans Hals, — we see a certain number of younger artists in this country making new efforts and founding a school of their own, which might be called the Amsterdam school. The principal representative of it is G. H. Breitner, the interpreter, of busy daily life in all its various shades of utterance, preferably as it is to be observed in the streets; besides, as one of the younger members of this powerful, colour-loving and impressionistic school, there is the son of the great master, the late lamented Jozef Israëls, Isaac. Breitner's contemporary and pupil is Florence Verster, the painter of sensitive still-life, next to them come De Zwart and Akkeringa.

As disciples of the Hagueschool I must mention the well-known portrait painter Thérèse Schwartze and the etcher of oriental and romantic architecture Bauer, whose work very often has a Rembrandt-like appearance, whilst Dr. Jan Veth, though displaying a thorough knowledge of Rembrandt in his writings, pursued an eminently analytical course in his own work and together with Haverman has taken up one of the foremost places among our "exact" portrait-painters. Dr. Veth's appointment as an extraordinary professor in the Royal Academy for Plastic Arts to teach portrait-painting has received general approbation. Besides these, the artist Jacobus van Looy, no less known as a painter of the realistic genre than as a literary man, then the serene painter of quiet ditches, village streets and solitary farmhouses Eduard Karsen, in whom the influence of the Hagueschool is less prevalent, and the expressive and monumental painter Willem Witsen, who is principally known as an etcher however, must be mentioned. Jan van Essen, the painter of animals, Steelink and Pieters practise a monumental style of art.



The sewing girls. — Painting by Josef Israëls.

Again a younger generation of painters is confirming the regained tradition. They are still



Cows by the ditch-side. — Painting by Willem Maris.

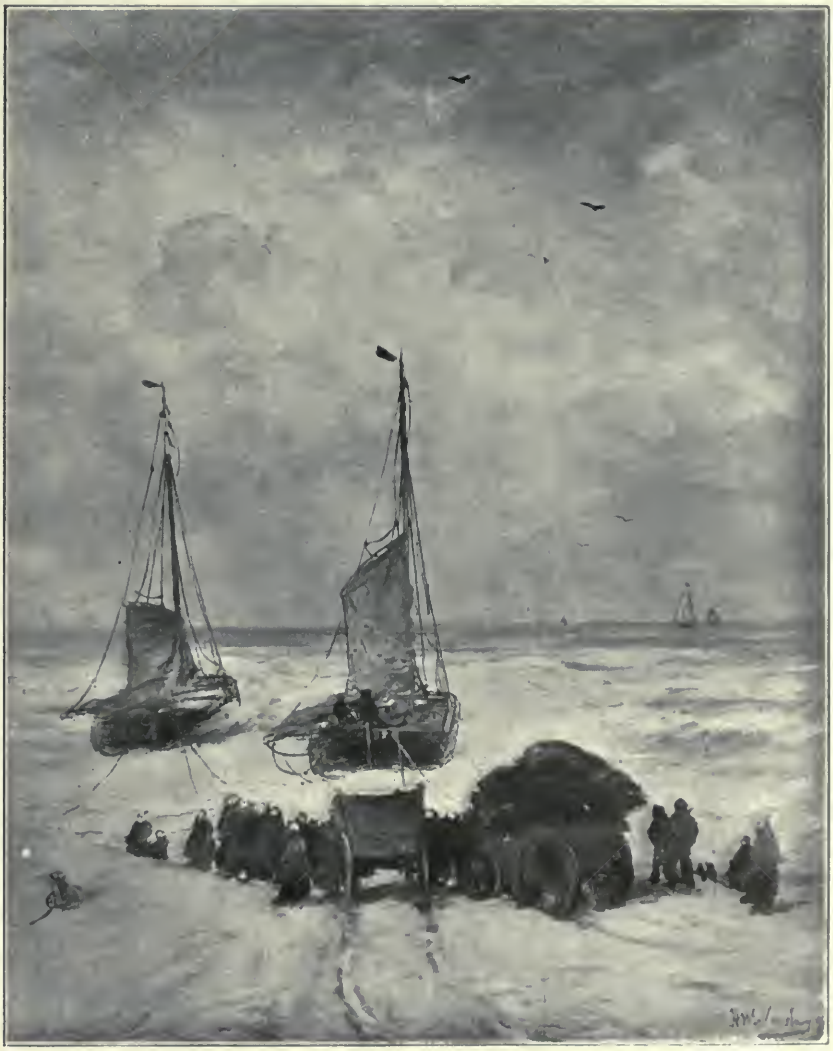
in the midst of their development, creating in the full swing of their enthusiasm. I shall only mention here the names of a few of them, whose pictures are already well-known beyond our boundaries, through international exhibitions, mostly figuring among the international, fortunately rewarded, painters. There is Willy Sluiter, who paints in rich colours the typical life of our coast population; further: Martin Monnickendam, with his powerful compositions; Piet van der Hem, who used to show a preference for outlandish subjects; beside these, Dutch to the core, both in subject and style: Bastert and Van Soest, Wijsmuller and Wiggers, Eduard Koning, Konijnenburg and Wolter, Mrs. Bisschop-Robertson and Van Mastenbroek, Kamerlingh Onnes, Van Raalte and Georg Rueter. As etchers I mention some of the best known, such as van de Valk, Storm van 's-Gravesande, Graadt van Roggen, Wenckebach and two masters of the etching needle and of wood engraving whose works find high praise far beyond our boundaries: W. O. J. Nieuwenkamp and J. G. Veldheer.

Over against all these I place the peculiar personality of Jan Toorop by itself. It is hard to group him among a special school, perhaps for the very reason that his genius has studied so many schools. And although that powerful artist Vincent van Gogh must not be looked upon as the leader of a special school there are specimens of Toorop's art that on the surface elicit comparison with that deceased great Dutch master. At present Toorop is considered the pioneer of some ultra-modern tendencies, because his versatility stamps him as a seeker rather than as leader. Both his religious and his secular works deserve the great reputation which this painter and draughtsman has always gained.

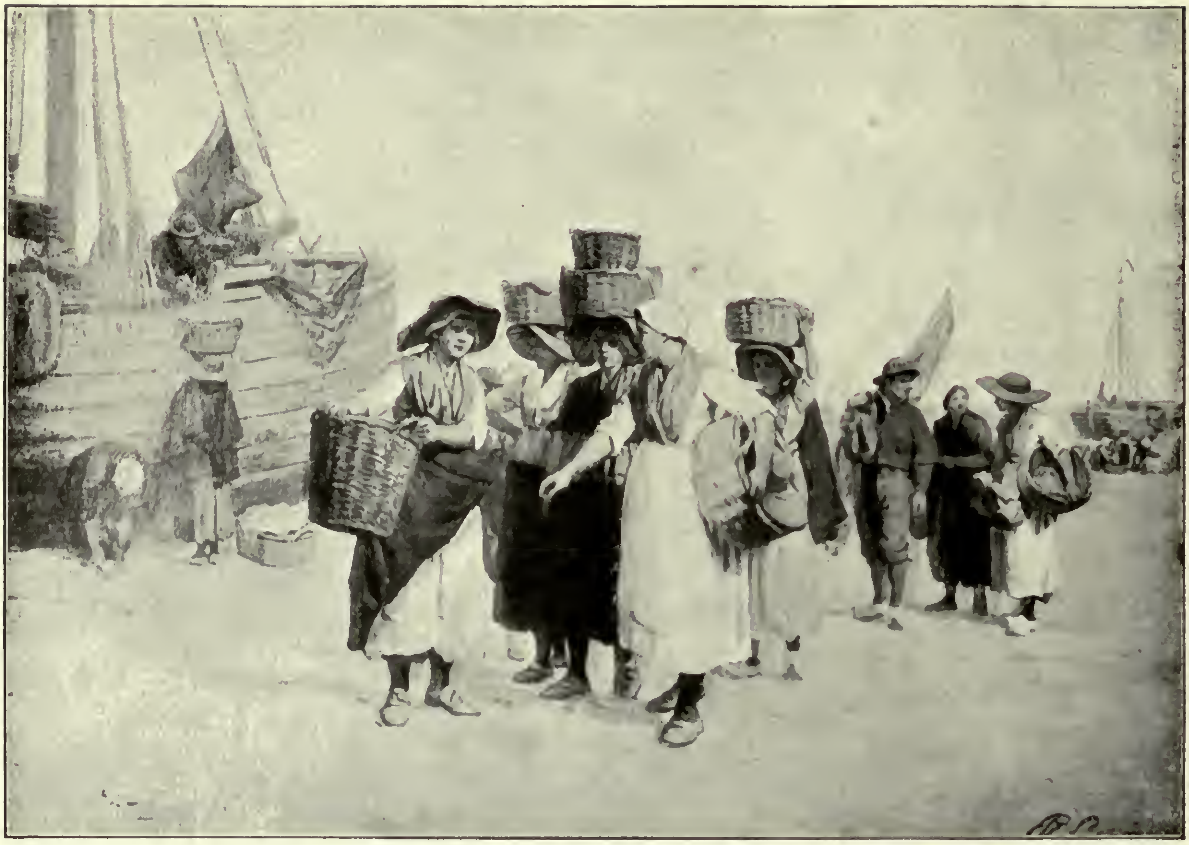
Examples of neo-impressionistic art may be found in this country too. The general public as yet stands aloof, though for example a pioneer as the Laren painter Hart Nibbrig, who died some years ago, formed pupils as a pointillist. Neo-impressionism, such as cubism and futurism, imported from abroad and practised here by a few painters do not seem to thrive so well in this country, which otherwise is quite open to new forms of art. One of the most original representatives of our neo-impressionism in painting is Jan Sluyters, a daring colorist and draughtsman.

Under the influence both of William Morris, the great English reformer of applied arts and of Walter Crane, a number of Dutch artists have applied themselves to decorative and reproductive art. Their leader was Professor A. J. der Kinderen, who zealously strives to assign to the decorative style of art a place in social life, by which the original vocation is restored to the art of painting. Since the first of April 1907 he has filled the post of professor at and director of the "Royal Academy for Plastic Arts" at Amsterdam, as successor to the eminent artist Allebé, thus finding an opportunity to imbue his pupils with his strenuous idealism.

Richard Roland Holst, who is ten years younger than Der Kinderen, became the acknowledged chief of decorative and graphic artists in Holland after the latter had been appointed to his directorship. Government has expressed its high appreciation of his work by appointing him extraordinary professor of composition in the Royal Academy for Plastic Arts. I also wish to mention the important lithographic works of Th. van Hoytema, who is especially inspired by subjects taken from the Dutch ornithological world, whereas that subtle artist [illegible] Dysselhoff by preference applies himself



Fishing boats. — Painting by H. W. Mesdag.



Fisherwomen. —Painting by Blommers.

to the portraying of the inhabitants of the aquarium. Van der Poll is one of our best known animal painters.

Lion Cachet, Chris Lebeau and T. Nieuwenhuis are creators of a number of works in the wide province of applied decorative arts.

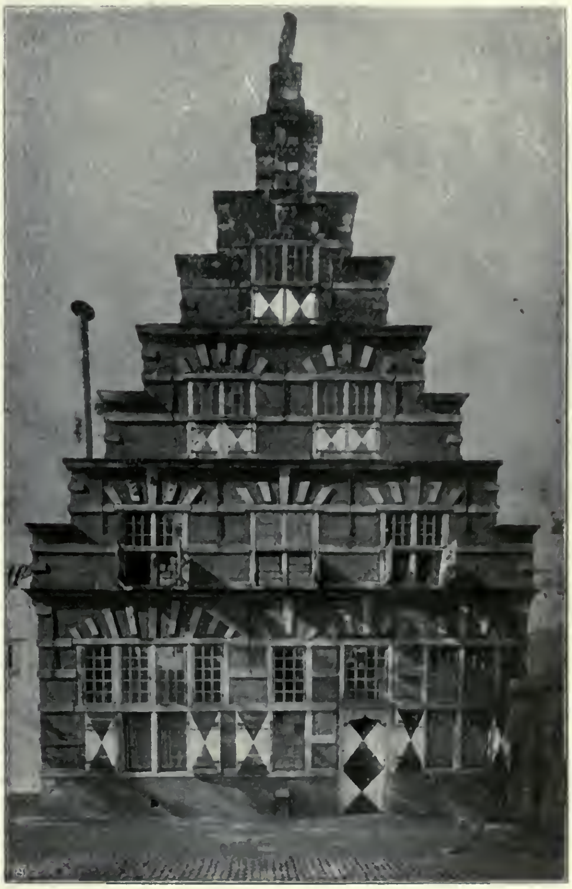
Colenbrander's, Lannooy's and Brouwer's pottery (Gouda) has gained the praise it so richly deserves. Brom's art as a goldsmith and Penaat's and Eisenloffel's craft have made their names and works known practically all over the world.

Lastly there is the peculiar mode of illustrating books, which only recently has drawn the attention of Dutch artists; the ladies Nelly Bodenheim, Willebeek Lemair and Rie Cramer have already made a name for themselves by their cleverly illuminated, patriotic, old and new books for children.

As regards the art of caricature we may indicate in this country a dozen of very able cartoonists, practising this fluent style of art, whose chief is Louis Raemaekers. His art, as a direct outcome of the present war, became well-known far beyond our country, though his ruthless cartoons were certainly not equally appreciated by the two groups of belligerents. In our country itself a deserved popularity is enjoyed by many regular cartoonists whose work the public sees reproduced in our principal daily and weekly papers. Among them I mention L. J. Jordaan and the aforenamed artists Willy Sluiter, Piet van der Hem and Jan Sluyters, while that diligent draughtsman Johan Braakensiek should not be forgotten. Also the work of the late social-democratic cartoonist Albert Hahn, was very popular in Holland.

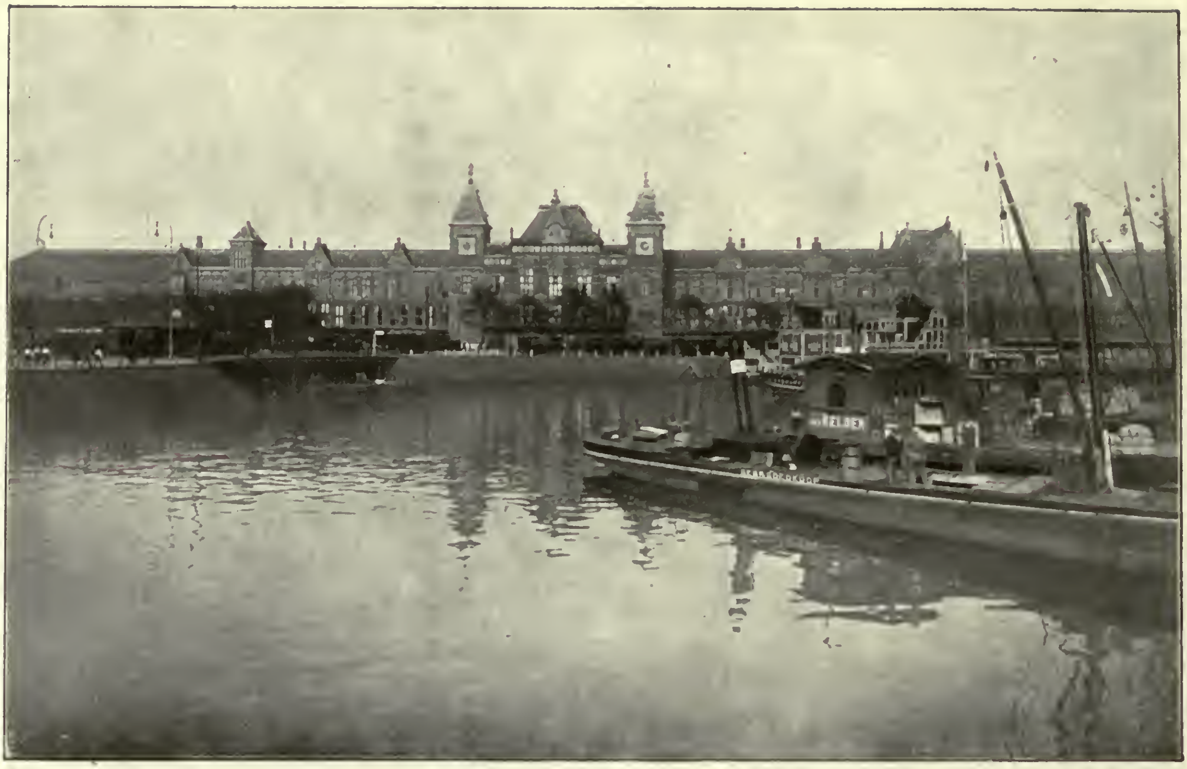
SCULPTURE AND ARCHITECTURE.— In the afore-cited great period of creative power in the seventeenth century a national style of building arose. Both sculpture and architecture at that time were entirely in harmony with the glorious Dutch Renascence. But later on these two arts, even to a larger extent than was the case with the art of painting, were for a long space of time to suffer from a marked lack of originality. Also nowadays there are many famous Dutch architects who prefer to draw their inspiration from the bold, peculiarly-Dutch character of seventeenth century style to creating a new style of their own. Especially for modern town-halls and the building of railway-stations practically no new form has yet been invented. The great masters among our Dutch architects rather give their attention to the designing monumental edifices. With the country-house the case is different. The influence of the English cottage-style is very often prominent, it is true, but for the rest most of the modern Dutch country-houses are erected in the customary national style of architecture. The revival of the monumental style of building is conspicuous in the south of the country for its many churches, cloisters and seminaries built since the restoration of the episcopal hierarchy in 1853; especially the new Gothic style was adopted here.

Germany's prosperity after 1870 on the whole did not fail to bear influence on our country. The Italian Renaissance, which before was the principal style, tended to revive the old renaiscence in Germany and consequently also in this country. As leader of the Gothic style the doyen of our architects, Dr. P. J. H. Cuypers, especially came to the fore. To him we owe, besides a great many Roman Catholic churches, several famous secular works, of which I only mention the two principal: the National Museum and the Central Railway Station both at Amsterdam; of his restorations I cite as an instance the reconstruction of the magnificent castle of Haarzuylen near Utrecht.


Specimen of Old-Dutch frontage.

This eminent architect died in 1920; among the younger generation of Dutch modern architects there are his son and his nephew Joseph and Eduard Cuypers, besides Baanders, de Bazel, Gratama, Van Gils, Hanrath, Kromhout, Leliman, Van der Mey, Van der Steur, Weissman, etc., who partly pursue a course of their own and partly have invented a modernization of the ancient Dutch style for their greater or smaller works of architecture. As the leader of the late modern school of architecture however we acknowledge the powerful personality of Dr. Berlage, the seeker for independent forms, embodying his most characteristic creation in the Royal Exchange at Amsterdam.

Of the younger architects De Clercq and Slothouwer have come to the fore. The new



The Central Station at Amsterdam.— Architect Dr. P. J. H. Cuypers.

"Amsterdam School" represents the ultra modern phase and counts a number of eminent followers, among whom is the first lady architect Miss Kropholler. The Government has also shown its interest this year by nominating a State Committee who will have to advise for Architecture.

The revival of our Dutch sculpture too reckons from a recent date; exactness in characterization and a craving for naturalness are its distinctive features. This is shown best in the modern works of Toon Dupuis, Miss Thérèse van Hall, J. Mendes da Costa, Odé, Pier Pander, Teixeira de Mattos, Zijl and others. The forte of these sculptors is rather the typical intimate feature that has always characterized Dutch pictorial art than monumentality. In fact, Holland has never been a country for statues and impressive figure-groups. The art of glass-staining has also revived, and is chiefly pursued by J. L. Schouten at Delft and the "Stichtsche Glass-trade" at Utrecht.

In connection with the present remarks on our arts of painting and architecture, which practically are closely united with all present-day pursuance of art by the Dutch, I must not omit to mention some names of our art critics and art historians, who are well-known also abroad, viz. Dr. Bredius, Dr. Jan Veth, Dr. Hofstede de Groot, Professor Vogelsang, Professor Martin, Professor J. Six, Dr. Jan Kalf, Dr. Pit, Just Havelaar.

Our art institutions.— In giving here a synthesis of the principal things that are produced in this country in the province of art, I must not fail to draw attention to various important public institutions and to the activity, not least on the part of the Government, as regards arts generally.

Then our thoughts are naturally directed in the first place to our Dutch museums, which are so deservedly celebrated and of which the State Museum at Amsterdam with its three departments: Picture-Gallery, Dutch Museum of History and Art and the Royal Cabinet of Engravings, ranks first. In addition to this we have at the Hague: the Maurits-huis, the Mesdag-Museum, the Meermanno-Westreenianum Museum and the Royal Cabinet of Coins; at Delft, the Royal Museum Lambert van Meerten. Of the many important municipal museums I only name the Municipal Museum at Amsterdam (including the Suasso Museum), the Frans Hals Museum at Harlem, the Municipal Museum at The Hague, the Boymans Museum at Rotterdam, the Frisian Museum at Leeuwarden and the Groninguen Museum at Groninguen; further the Museum of Middelburg of the Zealand Society with the most complete collection of coins and medals, the Cloth Hall at Leyden; in the latter town there are the museums whose world-renowned treasures should perhaps sooner be mentioned under "Sciences" than under "Arts," such as the Royal Museum for Antiquities, the Royal Ethnographical Museum, the Herbarium and the Museum for Natural History, next to London the richest collection, especially of fishes.

A State Committee was recently instituted having to project plans for a re-organization of Dutch museums.

As may appear from a remark made in passing in the previous chapter the opportunity of receiving an education for plastic arts, as afforded by the government, is being continually extended. Half a century ago, under Thorbecke's ministry, it was maintained that Art does not pertain to the cares of government. Fortunately enough our present-day governments hold other views in this respect. Besides various chairs in the Utrecht and Leyden universities we have the Royal Academy for Plastic Arts at Amsterdam, where in June of this year the retired professor Six has been replaced by one professor, three extraordinary professors and two lecturers. On the State Budget for 1918 an item has been voted for the appointment of a lecturer of art-history in the

The State Museum at Amsterdam. — Architect Dr. P. J. H. Cuypers.

university of Groninguen. In the Royal Academy for Plastic Arts at Amsterdam, where by far most of our painters and sculptors are trained, gold and silver medals of honour are awarded at competitions, not only for painting and sculpture but also for architecture and the art of engraving. Those who have gained the gold medal of honour and give evidence of great talent and an exceptional turn for their art may be endowed with an exhibition during four subsequent years at most, by the Queen, on the recommendation of the Education Committee, so that they may further qualify themselves abroad (Prix de Rome). The Royal Normal School for the Training of Drawing-Masters and the Royal School for Arts and Crafts at Amsterdam as well as some of the principal private schools for art, e.g. the School for Arts and Crafts at Harlem, the Quellinus School at Amsterdam, etc. also deserve special mention. A special inspectorate has recently been instituted for instruction of art, with which Dr. A. Pit has been entrusted.

An important institution was the Committee for making up and issuing a catalogue and a description of Dutch Monuments of History and Art, which was dissolved a short time ago. Chairman of this Committee was the nonagenarian architect Dr. P. J. H. Cuypers; secretary was one of our well-known critics of historical art, Dr. Jan Kalf. This committee has made a name for itself by publishing four provisional catalogues in the widest sense of the word of the monuments in a few of our provinces, and also Dr. Jan Kalf's important work "The Barony of Breda".

Interior of the State Museum.

On behalf of the restoration of Dutch monuments not only private people but also the Government spend larger and larger sums of money every year.

It is in connection with what has been said, that I must mention here the name of the pioneer and untiring advocate of these matters, the late Jonkheer Victor de Stuers L.L.D.; he was the first head of the department "Arts and Sciences" in the Home Office. Through his strenuous endeavours to fight against conservative and narrow-minded ideas in Holland he roused the nation and with the aid of Dr. Cuypers he knew how to give an impetus to a great number of important restorations and the preservation of a good many of our most remarkable and beautiful monuments.

By the side of the valued methods of the late Dr. Cuypers, more modern views as regards the restoration of monuments have of late years almost generally been followed in Holland. These views have been laid down in a number of theses accepted by the above mentioned critic of historical art Dr. Jan Kalf. I consider it meet, thinking of the innumerable treasures of ancient architecture in Holland, to cite some of these theses here for those foreigners who take an interest in our country.

For buildings that have been withdrawn from their original purpose and that have not been given another practical use, the general rule is that the architect shall avoid rebuilding when they are quite out of repair, while he shall at the same time confine himself to the consolidation of their ruins and prevent their further dilapidation. The purpose of repairing shall not be the full restoration to a former state but the preservation of what has been left in the present condition and of the later alterations and additions that have value from an archaeological, historical or artistic point of view. Consequently we observe here the maxim applied that preservation goes before restoration, whilst restoring is only then allowed when it is inevitable for retaining the building. The Government, acting in accordance with these principles, have put a stop to the mode of restoring, pursued hitherto. On the Estimates for every new year an item is placed for instituting a State Committee who will have to care for Dutch monuments, with a permanent bureau. The Committee, which has now been nominated, consists of two divisions: A, for drawing up a catalogue and description of monuments, in substitution of the dissolved Committee mentioned above, and B, for restorations.

The Maurits-house, picture gallery at the Hague.

Dr. Cuypers, who was elected Chairman of the Committee and also of the division B, is now dead and has been replaced by S. Gratama, L.L.D. Secretary of the Committee and of division B is Prof. Van der Steur, whilst Dr. Jan Kalf has been appointed Director. Members of division B are also: De Bazel, Dr. Berlage, Dr. Bredius, Jos. Th. Cuypers, Dr. Jan Kalf, Prof. der Kinderen, Dr. A. Pit, and others.

Much for the preserving and collecting of treasures of art in Holland is done by the "Rembrandt Society", established at Amsterdam in 1883, which amongst other things assists the Government, provinces and municipalities, occasionally even other corporations and persons, in purchasing works of art by granting them donations or by advancing them moneys, either with or without interest, sometimes also taking measures to preserve works of art if the said purchase or preservation could not have been sufficiently effected without such assistance.

In this year (1918) the Society "Hendrik de Keyser" was founded with the object of preserving old buildings that are important from an architectural or historic point of view. The Society "Heemschut" dating from 1911, strives to preserve remarkable places of natural beauty.

To conclude, I must make mention of our famous art-societies, of which I only name here the most important: "Arti et Amicitiae" and "Sint Lucas" at Amsterdam and "Pulchri Studio" at the Hague.

Belles-lettres and journalism.—As regards intrinsic merit Dutch literature deserves without any doubt to rank as high as Dutch painting or other Dutch forms of art alluded to before. However in matters literary the drawback of the slight extent of the Dutch linguistic sphere, — Holland, part of Belgium (Flanders), part of South-Africa and of our East- and West-Indian colonies, makes itself keenly felt. How many foreigners speak and read our vernacular adequately to appreciate the value of our literature?

As early as the Middle Ages when Dutch literature arose, some Dutch authors wrote in Latin (Erasmus), and in the seventeenth century, when under the influence of the Renaissance and Humanism our great prose writers and poets, as Hooft, Cats, Huygens, Bredero and others, formed a celebrated literary circle at Muyden called "the Muyderkring", where the Golden Age, the High Day of Dutch literature, was inaugurated, the small scope of Dutch as an international medium for literary art still prevented the works of these writers becoming universally known. For example, Vondel, the Prince of our Dutch poets, has only importance for our own literature, and yet his "Lucifer" deserves in every respect to be put on a par with Milton's "Paradise Lost".

Again, which foreigner knows our beautiful, but difficult language sufficiently to enjoy our literature which only very rarely crosses the boundaries of Holland in a translated form? Why is it? Because the correct pronunciation of our language is so extremely perplexing to the foreign tongue.

For all that, the works of our great writers of fiction, richly deserve international praise and would not fail to catch the world's attention if they were only known in foreign lands. I mention here alphabetically the names of a few of our literary artists only, convinced as I am, that some of their works have in some form or other crossed the Dutch boundaries as translations: Ina Boudier—Bakker, Henri Borel, Carry van Bruggen, C. J. A. van Bruggen, M. J. Brusse, Louis Couperus, Lodewijk van Deyssel, Frederik van Eeden, Marcellus Emants, Herman Heyermans, Jacobus van Looy, Johan de Meester, Top Naeff, Is. Querido, Mr. Herman Robbers, Mr. and Mrs. Scharten—Antink, Arthur van Schendel, G. Schrijver. I might add the names of a number of clever Flemish authors, but I point only to the works of Stijn Streuvels and Cyriel Buysse. The names of some of the best known Dutch poets, alphabetically enumerated, are:

C. S. Adama van Scheltema, Frans Bastiaanse, Dr. Boutens, Geerten Gossaert, Herman Gorter, Willem Kloos, Aert van der Leeuw, Mr. A. and Mrs. Henriette Roland—Holst, Helene Swarth and Albert Verwey.

The work of these literary celebrities, besides that of a great many other meritorious writers, is comprehended in a considerable number of novels, novelettes, sketches and poems; moreover, their contributions are regularly published in various dailies and weeklies and in a great many literary periodicals.

As a consequence of a vigorous literary revival in 1880 a periodical was founded called "De Nieuwe Gids" (The New Guide), which at once took up its place at the side of "De Gids" (The Guide), a monthly that had already flourished in the time of a preceding literary generation, but for all that had since been materially rejuvenated. Afterwards "De Nieuwe Tijd" (New Times), "Elsevier", "Onze Eeuw", "Groot Nederland" (Greater Holland), "Stemmen des Tijds" (Echo of the Times) and a few other purely literary periodicals, followed.

Yet the public at large hardly responded to this literary revival. Even in our days we cannot properly speak of a popular literature in Holland, in spite of the endeavours of a few publishers, who by publishing popular books at popular prices, try to bridge the gulf lying between the masses and their literary leaders. This lack of popularity of the Dutch literary artists with their own countrymen is perhaps accentuated by the fact that so many Dutchmen read English, French and German well enough to fully appreciate the literary productions of these respective tongues in the original. This also helps to account for the influence exerted on our prose writers and poets by the example set by the French school of Flaubert no less than that of Shelley and Keats.

One of our cleverest writers, Herman Heyermans, lived in Berlin for some years and there wrote his vivid and popular sketches in the German language, generally under the pseudonym of Samuel Falkland. This author, at the same time, is the foremost among our Dutch playwrights. He wrote a considerable number of tragedies and comedies, mostly with a purpose, which of late years, especially after his return to Holland, have repeatedly been produced by his own theatrical company at Amsterdam, the "Nederlandsche Tooneelvereeniging" (the Dutch Stage-Society).

Of the other more or less productive Dutch playwrights I mention the romantic plays of Jonkheer A. W. G. van Riemsdijk, further the dramas of Jan Fabricius and Henri Dekking, which widely appeal to public favour; the works of Willem Schürmann, who died some years ago at a youthful age and of C. P. van Rossem; the intimate art of Frans Mijnssen; the pieces-à-these of Marcellus Emants and of Dr. Frederik van Eeden, whose plays like those of Heyermans and Van Rossem have frequently been produced abroad. Among the women playwrights I confine myself to naming Ina Boudier-Bakker and Simons-Mees.

Later on I shall have occasion to say a few words about Dutch theatrical life proper, but I prefer to give first an outline of our journalism.

Also here I shall have to be very short, although the number of newspapers extant in Holland is surprisingly large.

The Dutch daily press is duly famous for its intrinsic value as well as for its moderation. for its information as well as for its absolute incorruptibility.

Dutch newspapers partly subsist on their regular subscribers; their advertisement-columns are very extensive, but street vending is comparatively small, extraordinary circumstances excepting, of course. Almost every village has a local paper of its own, treating of local politics and local news, but also containing a summary of the most important foreign events. The leading provincial newspapers exercise a certain influence.

Among the principal daily papers I cite the "Nederlandsche Staatscourant" (Dutch Government Gazette), which was caused to be issued by Royal Decree of the 18th of December 1813, and which is the official means of utterance of the Government. On the same date the "Staatsblad" (Dutch Statute-Book) was founded, containing all Acts of Parliament, proclamations, publications, etc. from that date onwards, and also all those decrees and resolutions, the publication of which is deemed necessary or useful. In addition to this "Government Gazette", printing in full all appendices and proceedings issuing from the Houses of Parliament, another official paper has been published of late years, called the "Analytical Minutes of the Sessions of the Houses of Parliament". Of the private journals, be they conveyers of intelligence only, or be they the mouthpieces of some political party, I name as the principal: the liberal daily "Het Algemeen Handelsblad" (The General Commercial Gazette) of Amsterdam, "The New Rotterdam Newspaper", of Rotterdam, "De Nieuwe Courant" (The New Gazette) and "Het Vaderland" (The Fatherland) both at The Hague, "De Telegraaf" (The Telegraph) at Amsterdam, "Het Nieuws van den Dag" (The Daily News) also at Amsterdam, the anti-revolutionary "De Standaard" (The Standard), the Christian Historic paper "De Nederlander" (the Netherlander), and the Roman Catholic papers "De Tijd" (The Times) and "Het Centrum" (The Centrum) both published at Amsterdam and the "Maasbode" at Rotterdam; next the paper of the Dutch Social-Democrats, "Het Volk" (The People) at Amsterdam. Of the larger weeklies the most important are "De Haagsche Post" (The Hague Mail), "De Amsterdammer" (The Amsterdammer) the latter illustrated, which is an exceptional feature of the Dutch press. Among the illustrated weeklies the principal are: "Eigen Haard" (At Home), "Het Leven" (Life), "Panorama", "Wereldkroniek" (World's Chronicle), "De Prins" (The Prince), and the Roman Catholic "Illustratie" (Illustration), and the best-known satiric papers are: the "Notenkraker" (Nut-Crackers) and "Uiltje's Weekblad".

The Exchange at Amsterdam.—Architect Dr. Berlage.

Of about 1200 newspapers regularly coming out in Holland; 80 are issued once a day and 10 twice a day, 310 once a week, 150 twice a week, 20 three times a week, 15 once a month and 10 twice a month.

Besides these purely journalistic publications the others are of the following nature: 66 are devoted to various subjects in the province of aesthetics, belles-lettres, economics and politics generally, 26 to philology and literature, 29 to history and geography, 26 to fine arts, 105 to religion and theology, 76 to jurisprudence and state-institutions, 29 to mathematics, physics and astronomy, 31 to medicine and pharmacology, 73 to technical sciences and industry, 50 to commerce, traffic, navigation and fisheries, 30 to agriculture, horticulture and cattle-rearing, 72 to instruction and education, 10 to strategy, 20 to sport and games.

The Post Office at Amsterdam.

I must refrain from separately mentioning here the names of our best-known journalists. In fact, it is a custom with Dutch pressmen to sign their articles only very rarely, though of late years many contributions are signed with initials. As a rule the whole editorial staff of a newspaper collectively assumes the responsibility for the various articles and opinions printed in such a newspaper.

The essential value of Dutch journalism lies in its erudition, while its unimpeachable honesty acts as a safeguard to the strict independence of its votaries.

OUR MODERN MUSIC AND THEATRE LIFE.—Comparatively speaking the general importance of musical life in this country is of a rather recent date. Perhaps it would be wise to start with the year 1892, the year in which the "Maatschappij tot Bevordering der Toonkunst" (The Society for Promoting Musical Art) was founded. However, not until the last few decades of the 19th century national music may be said to have flourished in Holland. At that time other musical societies had also begun to thrive, as the "Vereeniging voor Noord Nederlandsche Muziekgeschiedenis" (Society for Studying the History of Music of the Northern Netherlands), the "Nederlandsche Toonkunstenaarsvereeniging" (Dutch Society of Musicians), the "Maatschappij Cecilia" (The Cecilia Society), the "Koninklijke Nederlandsche Oratoriumvereeniging" (The Royal Dutch Oratorio Society), the denominational Oratorio Societies and quite a number of other musical, singing and orchestral societies.

The Royal Conservatoire, founded at the Hague in 1827, is an institution subsidised by the Government, by the Provincial Council of South-Holland and the Corporation of the Hague respectively, whose Board of Directors and whose professors are appointed and discharged by the Minister of the Interior. By the side of this school for music a considerable number of municipal and private schools sprang into existence in the course of the 19th century, that bore their

The Orchestra of the Amsterdam "Concertgebouw". — Conductor Willem Mengelberg.

influence on the ever growing interest for music in Holland. Of late years the Conservatoire of the Amsterdam branch of the Society for Promoting Musical Art has also been subsidised by the Government, whilst from 1917 the Society itself has also received a State-subsidy. A State Committee instituted this year for the furtherance of musical art will have to advise Government as to how this subsidy, which must certainly be considerably enlarged in the near future, will have to be distributed among the various orchestras.

At present several Dutch towns have a band of their own. The orchestra of the Amsterdam "Concertgebouw" (Concert-Hall), founded in 1888 and at first conducted by Kes, has since gained a world-wide reputation under the masterly leadership of Willem Mengelberg. Without any exception this famous Amsterdam orchestra may be said to be first in Holland, although the Hague "Residentie-Orkest" (Court-Capital Orchestra), conducted by Dr. Peter van Anrooy, — who only quite recently took the place of Henri Viotta, — and another four municipal orchestras all over the country no less come in for a share of the music-lover's highest praise.

It has repeatedly been tried to found a national grand opera company in Holland, but without much effect. Some years ago however "the National Opera" has been set foot again which bids fair to have some lasting success and which has now been subsidized from the National Treasury and by some communities. In 1894 Viotta founded the "Wagner-Society", which from that date onwards has regularly produced at Amsterdam the musical dramas of the great master Wagner in model performances. It has also undertaken of late to give standard-representations of non-Wagnerian music-dramas. The "a-capella" choirs, originally conducted by Daniel de Lange who died some years ago in America, and afterwards by Averkamp and Wagenaar successively, as well as those by Arnold Spoel enjoyed great fame not only in Holland but also abroad. The Madrigal Society deserves special note, it is under the leadership of Sam Dresden who has re-discovered and brought to light treasures of old musical art. Duly famous for sacred concerts are: the organists: Johan Schoonderbeek at Naarden; De Zwaan at the Hague; De Vries, Anton Verhey, Besselaar at Rotterdam; Louis Robert at Haarlem; Evert Cornelis and Hasselaar at Amsterdam.

In our days the number of Dutch musical compositions of a varied nature is constantly on the increase. Popular national song has at all times been greatly in favour with the Dutch and many national hymns though dating back from centuries ago, maintain their grip on the general public, largely owing to the activity of the National Society for Promoting Popular Singing. The Government has shown its interest in these matters by granting an ample subsidy to the society "The Dutch Song". Of our leading composers I only include the names, not their works: Bernard Zweers, the late Dr. Alphons Diepenbrock, Dr. Johan Wagenaar, Dirk Schäfer, the late Daniel de Lange, Julius Röntgen, Antoon Averkamp, Gerard von Brucken Fock, Adriaan van Tetterode, Jan van Gilse, Marius Kerrebij, Dr. Peter van Anrooy, Willem Andriessen, S. van Milligen, Anton Tierie, Wouter Hutschenruyter, Emil Enthoven, Willem Pijper, van Goudoever, Alex Voormolen and Adr. P. Hamers and the women composers: Cornelie van Oosterzee, Catharine van Rennes, Anna Lambrechts—de Vos, B. Frensel Wagener—Koopman.

Among famous Dutch singers are: Noordewier-Reddingius, De Haan-Manifarges, Stronck-

The Municipal Theatre at Amsterdam.

Kappel, Tilly Koenen, Julia Culp and the men: Johan Messchaert, Antoon van Rooy, Jac Urlus, Gerard Zalsman, Thom. Denys, Jac. van Kempen, Max Kloos, Henri Albers. Most of these widely-known soloists and opera singers are much sought after for engagements abroad. I must refrain from mentioning the names of all the singers connected with the National Opera.

In conclusion I must not omit the names of J. H. Speenhoff, our national "bard", who has made a school as a singer in music-halls, and of Jean Louis Pisuisse, the best-known interpreter of original Dutch cabaret-songs.

As regards the Dutch actors and actresses I regret to say, that even the most famous among them have hardly ever succeeded, nor are they likely ever to permanently succeed, in reaping laurels for their artistic faculties abroad; another deplorable but logical consequence of the slight extent of our linguistic sphere of influence. Yet various Dutch actors have made star tours to our colonies, such as Louis Bouwmeester, Willem Royaards and Louis de Vries. Further there are some special cases, as Louis Bouwmeester, who made starring-tours to London, Paris, Cologne, Vienna and Statford, Henri de Vries, and Eduard Verkade who played in England and the first in the United States.

What is worse, until very recently national histrionic art was not at all very highly thought of in Holland. Foreign theatrical companies and foreign stars acting on the Dutch boards not unfrequently found greater favour with the better classes than our own troups and excellent actors.

Things have taken a favourable turn however: The interest of the general public in our national stage, — though not officially fostered yet by the Government, — has veered round and now is constantly on the increase, and fortunately the artistic value of Dutch histrionic art is rising proportionately. In this year a State subsidy has for the first time been voted for the Academy for Actors.

Of the various theatrical companies the "Koninklijke Vereeniging Het Nederlandsch Tooneel" (Royal Society The Dutch Stage) at Amsterdam receives a subsidy from Her Majesty the Queen. The well-known actor, Dr. Willem Royaards, who has won great repute as interpreter of many classical Dutch plays is the manager of this company. Another excellent company is established at Amsterdam, under the leadership of Herman Heyermans, who has been cited above as a productive, realistic playwright. The Hague has two first-rate companies, one of them being led by Van der Lugt-Melsert, who is noted for preferably producing originally Dutch plays, the other managed by Eduard Verkade. Also Rotterdam has its own company. Next there is a fairly large number of smaller companies having their own theatres or touring provinces. Most of these scarcely go in for "Grand drama", but generally make a specialty of comedy, farce and musical comedy, as a rule of foreign import.

Generally speaking the Dutch stage may not be reproached with cherishing one-sided preferences. Very likely it is to be considered as one of its best points that it hardly goes in for special fads and fancies, but with great talent knows how to adapt itself to the requirements of the purely national and typical style of original Dutch dramas, — the classic works of our great seventeenth-century poet Vondel still appear very often on the bills of more than one company, — as well as to those of the most important of foreign dramatic works. These are always very carefully staged, excellently translated and performed by a number of talented actors and actresses of great versatility, who know how to satisfy the internationally developed taste of the educated Dutchmen in every style of acting.

I must desist from naming here the leading figures on the Dutch stage. However I make an exception for the nestor of our actors, Louis Bouwmeester, who, though an old man now, is by many looked upon as the greatest of them. Moreover he is one of the few Dutch artists of the stage who have reaped laurels abroad, namely in one of his most celebrated Shakespeare-characters (Shylock), in which part he was loudly applauded beyond the limited range of our native tongue.

THE REALM OF LEARNING:

Theology. — In the preceding chapter I have devoted a few observations to matters of education in connection with the spiritual and religious movements in Holland generally. In the present chapter, treating of various sciences cultivated in this country, I should like to make some special remarks under the head of Theology, considered as a profession.

Students of theology, after passing the final examination of a Gymnasium or an equivalent examination for matriculation at a university, have first to attend lectures on the Hebrew language and Hebrew Antiquities. Expounding the Scriptures has always been considered in Holland as one of the most important of theological subjects. In the field of history of Hebrew literature, Spinoza (1632—1677) critically discussed its origin in his famous work "Tractatus theologico-politicus." His example has been followed ever since by many learned theologians. It is really impossible to give a survey here of all the many theological treatises, mostly written in Latin and consequently intelligible to all international men of learning, that have been handed down to us. Let it suffice to mention a few encyclopaedic standard works, such as: "Exercitia et Bibliotheca studiosi theologiae" by Voetius, the "De ratione studii theologici" by H. van Diest, the "Encyclopaediae theologicae epitome" (1832) by Clarisse, and of a recent date the "Encyclopaedie der H. Godgeleerdheid" (Encyclopaedia of Holy Divinity) by Dr. A. Kuyper (1894), as well as "Gereformeerde Dogmatiek" (Dogmatics of the Reformed Churches) by Dr. H. Bavinck. Then there is the famous work "Historisch critisch onderzoek naar het ontstaan" (Historical-critical investigation of origin) and the "Verzamelingen van de Boeken des Ouden Verbonds" (Collection of the Books of the Old Testament) by professor Kuenen, after the example given by men like Wellhausen in Germany not to forget the well-known Leyden Translation of the Bible by Kuenen, Hooykaas, Kosters and Oort and the short translation of the Bible by Prof. Obbink.

Readers, desirous of learning more about this branch of theological study in Holland may be referred to the following works: "Het godgeleerd onderwijs in Nederland gedurende de 16de en 17e eeuw" (Divine Education in Holland in the 16th and 17th Centuries) by Sepp; "Joh. Stinstra en zijn tijd, eene bijdrage tot de geschiedenis der kerk en school in de 18de eeuw" (Joh. Stinstra and his Times, a Contribution to the History of the Churches and the Schools in the 18th century); "Proeve eener pragmatische geschiedenis der theologie in Nederland van 1787—1858" (Essay on a Pragmatic History of Theology in Holland from 1787—1858) and the "Bibliotheek van Nederlandsche Kerkgeschiedschrijvers" (Library of Dutch Historians of Theology). Modern theology is treated in Roessingh's work "De moderne theologie in Nederland" (Modern Theology in Holland) of 1914, while the English work of James Hutton Mackay "Religious Thought in Holland during the Nineteenth Century" (London, 1911) contains very reliable information. Among the best-known theologians of the present day I cite the names of the philosophers Scholten and Kuenen, of Professor Chantepie de la Saussaye, Professor Is. van Dijk and of the Professors of ethics, Geesink and Hoekstra.

Jurisprudence. — In one of the last chapters, namely in the one treating of Dutch Political Institutions, the reader may have observed that the political life of a nation is closely connected with its juridical development.

Hence the history of Dutch jurisprudence may be divided into three clearly marked off periods on the analogy of the history of the Country itself, namely that of the Middle-Ages, the

Republic of the United Netherlands in the 17th and 18th centuries, and the Kingdom of Holland in the 19th century.

The first period was one in which common law, originating and growing from the economical and political needs of the people, was observed. It forms a vivid contrast with the two following, when law and people were severed from each other and the former became a law of jurists, so that it soon was tantamount to an occupation of specialists, called lawyers. The second period co-incides with the establishment of the modern State. The study of law becomes a distinguished profession and we observe a number of well-known jurists in this country, the value of whose works is still acknowledged by the present generation. The principal of them were Nicolaes Everhardi (obiit 1532), Viglius van Aytta (obiit 1577), Hugo de Groot, also called Grotius (obiit 1645), Ulrik Huber (obiit 1694), Simon van Leeuwen (obiit 1682), Johannes Voet (obiit 1714), Gerard Noodt (obiit 1752) and Cornelis van Bynkershoek (obiit 1743). Of all these Hugo de Groot, author of "De Jure Belli de Pacis", a book that has become a classic, and of "Inleiding tot de Hollandsche Rechtsgeleerdheid" (Introduction to Dutch Jurisprudence), is undoubtedly the most famous. Passing on to the third period we observe, that in the course of the nineteenth century jurisprudence and jurical educators in this country more and more began to look upon the studying of Roman Law at our universities as a means rather than as an aim. The historical school, as it developed in Germany under Hugo and Von Savigny, was eagerly adopted in Holland and found its representatives in a good many professors in our universities. Of late however a falling off in the studying of the history of Roman Law may be noticed again, whereas the study of Old-Dutch Law and its history is becoming more the vogue. Under the well-tried leadership of the professors De Geert van Jutphaas, Fruin and Pols, all of Utrecht University, later on supported by the Utrecht keeper of the archives Muller and the Leyden professor Fockema Andreae, the editing of our old laws and the study of Old-Dutch Law generally assumed a heightened importance.

The names and the works of our political economists, as Vissering, Pierson, Quack and Treub, — the latter also mentioned in another part of this book, — deserve to take a place of honour here.

Generally speaking the interest in "private law" made way for a new interest in "public and administrative Law", in which men of learning of world-wide reputation such as Johan de Wal and De Pinto took the lead. Professor Oppenheim, the commentator of Dutch municipal law, founded a school of his own. The names of Professor Buys and the Groninguen Professor Tellegen must not be forgotten. The recently deceased professor of penal law Van Hamel greatly enhanced the glory of the reputation enjoyed by Dutch jurists abroad; together with the Belgian and German professors Prins and von Liszt, he was the founder of the International Society for Penal Law. Of course we must not omit the name of the celebrated professor and Member of the Privy Council the late T. Asser, the man who took the initiative in the codification of international law, in which task he was supported by the late jurist Jonkheer P. R. Feith L.L. D. and the late E. N. Rahusen L.L. D., and which work proved the moving force of a number of important conferences on international law that were held in this country in the course of the last few years before the war. In consequence of these conferences the position of Holland in the field of international jurieprudence was not a little strengthened; we mention here the names of Jhr. Mr. A. F. de Savornin Lohman, Mr. Loder and Jhr. Mr. Dr. van Karnebeek. May we all soon see this useful work of peace, that has been so cruelly disturbed, taken up again by Dutch jurists. In conclusion I may add, that the principles for international law laid down long before the war by Professor C. van Vollenhoven, formed the basis of the well known project for world peace by Mr. Wilson.

Medical science. — When the first universities [were founded [in Holland the number of those who were fully qualified to fill a professorship was very small. The faculty of medicine was originally entrusted to the care of one single professor. For all that, the lectures delivered by our professors of medicine gradually became so universally renowned that from all parts of Europe students crowded to our country. The Leyden University, which was founded as far back as the latter part of the sixteenth century, during the first fifty years of its existence, conferred a degree on 137 medical students, of whom as many as 21 were English, against 11 Germans, 20 Frenchmen, 2 Danes and 1 Italian.

After Leyden, the universities of Groninguen, Utrecht, Franeker and Harderwijk became famous for the lectures on medicine given by professors of world-wide repute. Perhaps an exception should be made in the case of the Harderwijk University, which for some time at least does not seem to have been a credit to our country, if we must go by the following naughty epigram, made with reference to it:

"Harderwijk is een stad van negotie,
Men koopt er bokking, blauwbessen en bullen van promotie."
(In Harderwijk, a place where people barter,
They sell smoked herrings, bilberries and many a doctor's charter).

But the reputation of that university was never particularly great, though it was at Harderwijk that the famous Boerhaave took his degree, the man who was so well-known throughout Europe, that a letter with only the words "Boerhaave—Europe" on it was duly delivered to him.

We have an enormous mass of evidence that goes to prove that at that time anatomy was much practised in this country. The fame of our anatomists could scarcely have been preserved better than has been done by the brush of our seventeenth century painters. Rembrandt painted the Anatomy Lesson of Dr. Deyman, Gerard Dou that of Dr. Vesalius, Mierevelt that of Dr. van der Neer, Adriaan Backer and Johan van Neck that of Dr. Frederik Ruysch. In the preceding century Petrus Pavius, alias Pieter Pauw, professor in the Leyden University, was known as a celebrated anatomist.

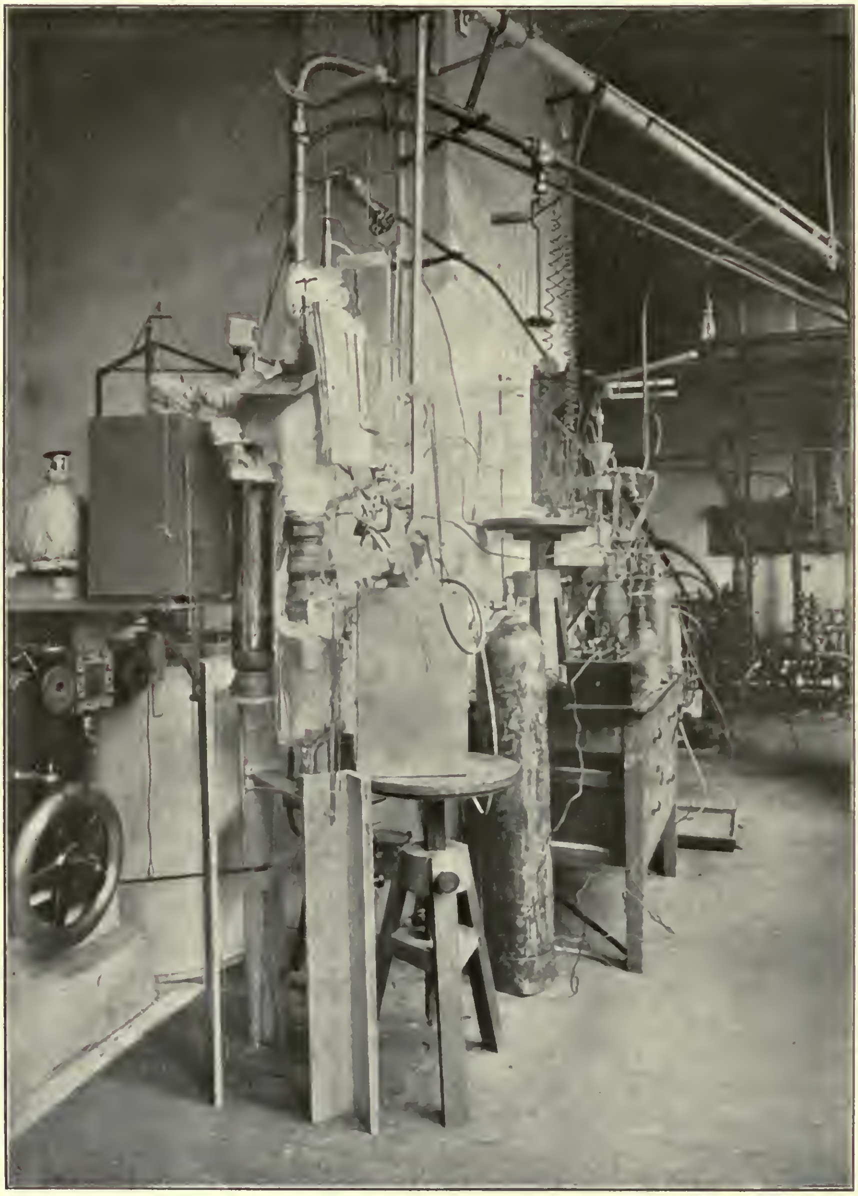
To give a few examples of the work achieved by these learned old Dutch doctors, I point to Herman Boerhaave, the man who first introduced clinical lectures, to his pupil Gerard van Swieten, who displayed his gifts at the Austrian Court and there laid the foundation for the Vienna school of medicine, to Anthony van Leeuwenhoek, who discovered the existence of bacteria and infusoria and disclosed a large field of study by his investigation of the circulation of the blood; in Amsterdam we to-day find a house bearing his name, recently fitted out as a Cancer Hospital, under the direction of Professor Rotgans; to Jan van Swammerdam who was recognised as one of the most famous naturalists and is still looked upon as one of the pioneers of entomology.

This predilection for scientific investigation and applied science has been maintained by the following generations. In the field of medical science international knowledge owes an immense debt to this country. Ophthalmology and physiology are still the special study of many learned Dutch physicians. At one time this branch of knowledge was represented by such skilled physicians as Professor Donders at Utrecht, an oculist of world-wide reputation. The leading Dutch physiological chemist in modern science is Gerrit Jan Mulder. The late Amsterdam Professor B. J. Stokvis was also widely reputed beyond the boundaries of his country, whilst the names of Professor Pekelharing, Professor Einthoven and Professor Hamburger must not be forgotten.

Furthermore, the practical application of medical science is flourishing also. I think of the internal clinics supervised by eminent physicians as Professor Talma, Professor Pel, Professor Wenckebach; the latter having found a new sphere of labour at Vienna; — of celebrated surgeons as Professor Korteweg and Professor Rotgans and so many others, who have determined that the lustre of ancient Dutch medical glory shall not tarnish. Mention must also be made of the institutions for "Tropical Medicine" at Leyden and at Amsterdam.

Physics and mathematics. — The seventeenth century, in every respect the Golden Age for Holland, was also productive of highly gifted men of learning in the province of physical and mathematical sciences. As a pioneer we acknowledge Professor Snel van Royen, called Snellius after the fashion of the times, who introduced Surveying of the land in Holland and started the cartographing of the area from Alkmaar to Bergen op Zoom, later on extended as far as Mechlin in the Southern Netherlands (the present Belgium). In this connection one should make mention of the General, Baron Krayenhoff, who lived in the nineteenth century, and of Simon Stevin, scientist of the sixteenth century (1548 — 1620), who made valuable experiments in the field of physics, especially as military and hydraulic adviser to Prince Maurice of Orange.

The fact that Descartes (1596 — 1650) lived in Holland for twenty years was of great influence on Dutch science. But in the first place our thoughts ought to turn to the brilliant figure of that great genius Christaan Huygens (1629—1695), a man in the front ranks of the world's scientists, who has ever been looked upon as the first of Dutch mathematicians and natural



The apparatus with which Professor H. Kamerlingh Onnes was the first to make helium liquid, in 1908.

philosophers. Also astronomy and mechanics owe a great debt to the stupendous mental endowments of this prodigy of learning. Even modern men of learning take the keenest interest in the comprehensive works of that master-physicist Christiaan Huygens. The "Nederlandsche Maatschappij van Wetenschappen" (Dutch Society for Sciences) has perpetuated Huygens' works by editing a series of works, thirteen volumes of which have been published, in the beginning supervised by the well-known scientist Professor J. Bosscha, at present under the care of Professor D. J. Korteweg. A worthy contemporary of Huygens was Johan de Wit, Grand-Pensionary of Holland and Zealand from 1653 to 1672, at the same time a skilled geometrician and ingenious arithmetician, still to-day revered by a grateful posterity as one of the principal initiators of life insurance by his computation of life-annuities in Holland.

The eighteenth century was an era in which the various theoretical theses laid down in a preceding century were practically worked out. In the nineteenth century we observe once more a period of great mental activity. The Amsterdam professor Van Swinden (1746—1823) takes an active part in the introduction of the metric system for weights and measures and is also the writer of a famous book on geometry. Afterwards Dutch mathematicians begin to show a preference for the French mathematical methods; the most notable professors of this are R. Lobatto of Delft and D. Bierens de Haan of Leyden.

After 1870 the application of modern geometrical methods and of theoretical mechanics causes mathematical science in Holland to be led in new channels. Modern Dutch scientists generally may be said to have largely contributed to the development of mathematical study, as is shown by the fact that a society has been incorporated at Amsterdam for the very purpose of furthering mathematics. Under the name of "Revue semestrielle des publications mathématiques" it publishes a special scientific periodical of its own and awards prizes for the solving of mathematical problems. Further there are "De Verslagen en Verhandelingen der Koninklijke Academie van Wetenschappen te Amsterdam" (Records and Proceedings of the Royal Academy of Sciences at Amsterdam), the "Archives Néerlandaises" and the "Nieuw Archief voor Wiskunde" (New Archives for Mathematics).

Proceeding to the field of physics the seventeenth century figure of Christiaan Huygens again comes before our minds. However, as I must confine myself here to Dutch sciences of the present day, I at once pass on to the name of J. Bosscha, already cited above, who in 1873 was appointed professor in the Technical University at Delft and who before that time had distinguished himself in the scientific world by his investigations on the retention of energy in electric currents. His excellent manual on physics is still generally used by students to-day.

In connection with this it is curious to recall to mind, that Professor H. du Bois, formerly in the University of Utrecht, instituted the so-called Bosscha laboratory at Berlin, intended for experiments in macro-magnetism, which institution has gained an international reputation because of its magnificent appliances and its eminent leader. Professor du Bois expressed his willingness to return to Holland and to present the Dutch Government with all the costly plant of the said laboratory, provided that the latter be prepared to establish an adequate laboratory at Utrecht, where he might continue his scientific labour as extraordinary professor. The building of this laboratory is all but completed, whilst Professor du Bois was appointed extraordinary professor a short time before he died in 1918.

The foundation of a laboratory for the above mentioned branch of science at Leyden was at the time an important factor for reviving the interest in it. It was in the first instance Professor P. L. Rijke, who restored to experimental physics its former significance. The world-renowned scientist and winner of the nobel prize J. D. van der Waals, since 1877 professor in the University of Amsterdam, died in 1916. His son is also professor in that university. He studied at that institution and took his degree on a dissertation, entitled: "On the laws of continuity of gaseous and liquid substances". Afterwards several important experiments in this branch of knowledge were made by this scientist at the Leyden laboratory on the subject of elasticity of fluids. The physical law of Van der Waals is an improvement on that of Boyle—Gay Lussac.

Since Professor H. Kamerlingh Onnes, who was born in 1853, was appointed director of the Leyden laboratory, experiments are continually being made there, also by foreign men of learning, on the transmutation of gases into liquids, in connection with the lowering of temperature in the cryogenic laboratory and effected by a kind of waterfall-process: methylchloride, ethylene, oxygen, air and hydrogen are alternately liquefied. In 1908 Professor Kamerlingh Onnes succeeded in liquefying the last "permanent" gas, viz. helium. He was awarded several distinctions, i.a. the Nobel-prize in 1913 and the Franklin Medal in 1915. As winners of the Nobel-prize the professors Lorentz and Zeeman conjointly, had preceded him in the year 1902. All it is note-worthy that in a lifetime no less than six Dutchmen have won the Nobel-prize, viz. Asser, Van der Waals, Van 't Hoff, Kamerlingh Onnes, Zeeman and Lorentz, and this in a population of six million people. I must also make mention here of the experiments made by Professor P. Zeeman (the "Zeeman-effect") and the latest experiments by Professor Kamerlingh Onnes in causing supra-conductivity of various metals at Helium temperatures. Also the theoretical-physical studies of Professor Lorentz at Leyden have secured for our country a prominent place of international honour in the line of modern physics, witness his theory of electrons which was evolved by him in a series of lectures, delivered before the students of the Columbia University at New-York in 1906 and at Leipsig in 1909.

Astronomy.—The Dutch astronomical observatories date back from the sixteenth century; William the Fourth of Hessen and Tycho Brahe were at that time possessors of a few establishments for astronomical observations. The first more official observatory was that of the Leyden University, founded in 1632, whilst that of the Utrecht University was erected in 1642. The astronomical observatories of Copenhagen and Paris were not built until the latter half of the seventeenth century. The said institutions of our two universities chiefly served educational purposes. The properly scientific astronomical work was for the main part done elsewhere in our country in a great number of private observatories.

In the present chapter, treating of Dutch sciences, I have repeatedly had occasion to mention the name of Christiaan Huygens and also in the ranks of our great astronomers a place must be allotted to him. After his death the making of astronomical observations came to a stand-still for a few centuries and we only observe a renascence in this lofty science in the course of the 19th century, when F. Kaiser) 1808—1872) made a special study of astronomy and succeeded in focussing once more the attention of the Dutch authorities and of the laity on this branch of knowledge by means of his numerous writings. The erection of new observatories at Utrecht (1853) and at Leyden (1860) was one of the outcomes of Kaiser's labour, which was especially characterised by his organising meridional observations and by his scientific investigations of double-stars and planets. His investigations as regards the planet Mars, whose rotation-period he was able to determine with the aid of Herschel's and Huygens' studies, form a brilliant specimen of scientific labour of his time.

At Leyden this scientist was succeeded by his pupil H. G. van de Sande Bakhuyzen, whilst some of his other pupils, namely M. Hoek and J. A. C. Oudemans, went to Utrecht. Professor van de Sande Bakhuyzen is known for having established the fundamental principles of astronomy and, of the two others, the former applied himself to the study of the orbits of comets whilst the latter deserved well of his country triangulation on Java. Professor van de Sande Bakhuyzen of Leyden was succeeded in 1908 by Dr. W. de Sitter as professor of astronomy and by his namesake E. F. van de Sande Bakhuyzen who died in 1918, as Director of the Leyden Observatory. The well-known scientist Professor Nyland at present teaches astronomy at Utrecht University while this science is taught at Groninguen by Professor J. C. Kapteyn, a man of international repute, whose work comprises statistics, distances, motion, number and brightness of stars and the constellation of the visible universe. Finally there is the Royal Meteorologic Institute, directed by Professor Van Everdingen.

In conclusion I may say, that the principal Dutch astronomical observatories and the larger observatories abroad are connected by ties of cordial scientific cooperation.

The Observatory at Leyden.

Mineralogy and geology.—With the exception of Isaac Hollandus, whose book "Opera mineralia" was published as late as about 1600 although he died in 1400, and of that versatile celebrity Christaan Huygens, and in more recent times of W. C. H. Staring, the author of "The Netherlands Soils" and drawer of a geological map of this country, no names of great Dutch mineralogists may be recorded throughout the centuries that have preserved international fame. It was not before 1876, when the University Education Act was altered, that in the universities of Leyden, Utrecht and Groninguen a chair was conceded to geological sciences.

The Groninguen chair was taken by professor F. J. P. van Calker, while at Utrecht a German Professor A. Wichmann, was appointed and Dr. W. Martin at Leyden. The first published important petrographical studies on the Scandinavian erratic blocks which are scattered over the north-eastern parts of our country, whereas the second chiefly devoted himself to the petrographical investigations of our East-Indian Archipelago.

Professor J. L. C. Schroeder van der Kolk of the Polytechnic School at Delft, who died at a youthful age, was the inventor of an ingenious method of determining minerals. Besides the study of mineralogy he also furthered the scientific investigation of petrography by issuing some highly interesting treatises on the microscopic nature of rocks in the eastern part of our East-Indian Archipelago.

On the whole, Dutch men of learning have rather applied themselves to the study of the geology of our extensive Asiatic colonies than choosing mineralogy as a special point of study.

Also in former times very important geological investigations were continually undertaken in Holland itself, for which we still honour the names of such famous geologists as J. Le

Franq van Berkhey (1729—1812), who investigated the soil of the west part of Holland, S. J. Brugmans (1763—1819), who continued the studies of Le Franq van Berkhey in the province of Groninguen and W. C. H. Staring already referred to above.

The conditions of our peculiar peat-soil formed already a subject of scientific exploration in the 17th century.

Of late years the initiative has been taken by one of our former ministers of agriculture, de Marez Oyens, who instituted a State Committee for the purpose of prospecting for useful minerals in Holland. In the chapter treating of Dutch industries I shall further have occasion to refer to the annually increasing output of our coal mines in the province of Limburg, whilst our salt-industry in the east of the country is becoming more and more productive.

We have to thank Mr. Van Waterschoot van der Gracht, Director of the said State Committee, and his co-operators Huffnagel, Jongmans, Klein and Tesch, for a large number of invaluable discoveries along the lines of geology and paleontology in Holland.

Important work in the same direction has already been done by J. Lorie, who made extensive investigations in relation to our dunes and fen-lands, to the dilivual soil of the rivers Rhine and Scheldt, etc. The results of our principal geological investigations have been incorporated in the Proceedings of the Royal Academy of Sciences at Amsterdam. Dwelling on the purely technical literature of this branch of science would lead me too far.

As to the exploration of our colonies, I must invite special attention for the labour of Junghuhn, who died in Java as early as 1862, but whose Indian work is still highly prized to-day. The engineer of the Indian mines, R. D. M. Verbeek, distinguished himself in international scientific circles by his unparalleled knowledge of the geology of the Indian Archipelago. Professor Molengraaff of Delft conducted some very important scientific investigations in Borneo (1894) and in Timor (1911). For a great length of time he had been superintendent to the geological service of the former Transvaal Republic. Professor Van Boren has recently made a geological study-tour in Java.

Dutch paleontology originally derived its scientific material from Mount Sint Peter near Maestricht exclusively, the results of which are to be found in the Teyler Museum at Harlem. One of our principal paleontologists of a former generation was Jacob Doornik, a very remarkable countryman, who was born at Leyden in 1777 and who died at New-Orleans, (in 1837). He was one of the few who in the beginning of the nineteenth century helped to pave the way for the later ideas expounded by Charles Darwin.

The most important studies in this field have of course been made in our colonies. The Leyden Professor W. Martin did most of his valuable work there. Both in the West-Indies (1886) and in the East-Indies (1910) he gathered a priceless amount of material. Moreover he edited a large number of monographs on the collections of fossils formed by Junghuhn, Verbeek and others.

I conclude with giving the name of the Amsterdam Professor Eug. Dubois, who singled out the fossil mammals as a special field of study and who enriched science with the remarkable discovery of the fossil man-like ape, the "Pithecanthropus erectus," whose remains were found by him near the river Solo in Java.

Botany and zoology. — That Dutch botanists and zoologists already in former ages enjoyed world-wide repute may to a large extent be connected with the fact that the famous Dutch etchers and engravers have always, in producing their lasting masterpieces, found a ready inspiration in new discoveries and explorations of a natural-historical character.

Botany, as a systematic science, was already at an early period a favourite field of study in this country. In the first place we think of the Swede Carolus Linnaeus (1707—1778), who during his long stay in Holland produced his two standard works: "Systema Naturae" and "Genera Plantarum," to which he afterwards added his famous book "Hortus Cliffortianus", in honour of the Amsterdam burgomaster Clifford, at whose country-seat "De Hartenkamp" near Harlem he had resided for some length of time.

Passing on to the following century, we note the important event of the establishment of the "Royal Botanical Gardens" at Buitenzorg near Batavia on Java (1817), whose first director was the Leyden Professor Reinwardt. He was succeeded by Professor Blume, by Professor Scheffer and by Thiesmann, and in recent times by the late Professor Treub, who died a few years ago and who was one of the group of three well-known brothers that are each of them great Dutch professors. The other two are Professor M. W. F. Treub, the great statesman, financier, and economist and the renowned Amsterdam gynaecologist Professor Hector Treub.

In 1845 Professor Teysmann founded a herbarium at Buitenzorg, whereas the Government-Herbarium had been removed from Brussels to Leyden as a consequence of the separation between the Southern and the Northern Netherlands in 1830. Both Buitenzorg and Leyden became centres for the study of the treasures of the Malayan flora. Of late years systematic botany is also practised at the Utrecht University, where amongst others, specimens of West-Indian flora are being successfully investigated.

Besides to Professor Treub, whose work at Buitenzorg built a "Monumentum aere perennius" for him, we may point with excusable pride to our celebrated botanist Professor Hugo de Vries, until this year director of the Amsterdam Hortus Botanicus, who is recognized all over the world as a scientific star in connection with his famous "Mutation Theory" (1901—1903), as a consequence of which many new theories and fields of investigation have been opened up.

The study of zoology too became a field of scientific investigation at an early period in Holland. Was it not the Dutchmen Johannes Swammerdam and Antony van Leeuwenhoek who in the latter part of the seventeenth century distinguished themselves as naturalists and who undertook scientific investigations on insects and mollucsa? The former's well-known work "De Bijbel der Nature" (The Bible of Nature) was edited by Boerhaave in 1737, illustrated with a number of excellent and highly artistic engravings from famous contemporaries. Antony van Leeuwenhoek, with the aid of one of the first microscopes in the world, constructed by himself, discovered the existence of "protozoa" and "bacteria," followed the contractions of muscles, etc.

In the eighteenth century a considerable number of zoological students from all corners of Europe came to our country to complete their studies here, not only receiving an excellent training but also enjoying the benefit of the magnificent collections of zoological specimens extant in Holland. As an exchange for the hospitality tended to them, Dutch science was enriched by not a few of their important discoveries.

Holland, as a country of zoological fame, maintained its reputation in the following century by the careful preservation of the collections formed by private people, public institutions or by scientific societies. Of the last I mention besides the Teyler Museum at Harlem, which had already been founded in 1778, the well-known Royal Zoological Society "Natura Artis Magistra," established at Amsterdam in the year 1838, the Zoological Gardens at Rotterdam and the National Museum for Natural History at Leyden. In this connection I must not fail to include the "Colonial Museum," the collections of which however will in the near future be transferred from Harlem to Amsterdam, where they will be housed in a very extensive building as a special division of the "Colonial Institute." The number of scientific treatises, chiefly compiled by the "Dutch Society for Sciences" (1752) and the "Royal Academy of Sciences" (1851) and further the number of scientific works on zoology of Dutch zoologists is almost countless. The Veterinary School at Utrecht was recently raised to the rank of Veterinary College, the first of the kind in this country, where a great number of students are taught under the direction of Professor J. Wester.

No more must I forget to draw attention to the important work done by the Zoological Station at Den Helder, founded in 1875, where especially nautical zoology is scientifically inquired into. It is obvious that this work is of great practical use, because one of the most essential sources of Dutch prosperity is found in the Dutch fisheries.

Of late years some other valuable nautical investigations have been made in the field of zoology. I refer to the Siboga-Expedition (1899—1900), conducted by Max Weber, the investigations of the Zuyder-Zee undertaken by some prominent Dutch zoologists and in general to the zoological explorations that are constantly being entered upon in the oceans round the East-Indian Archipelago.

The Aquarium at Amsterdam.

Chemistry. — The typically-Dutch names of the chemist and alchemist Hollandus and of his son Jan Isaaczoon Hollandus, who lived in the fourteenth and fifteenth centuries, have already been referred to in the present chapter. The importance of their scientific labours may best appear from the fact that their works were repeatedly reprinted, not only in Holland but even abroad, between the years 1600 and 1746.

We now come to a second stage of prosperity in the Dutch chemical science, lying between 1802 and 1880, when the teaching of this science in our country had been reorganized by the Rotterdam chemist G. J. Mulder, afterwards professor at the University. His treatises on "albuminoids" were discussed in chemical circles all over Europe. His work was continued by some of his most notable pupils, such as the Groninguen Professor Van Kerckhoff, by the Professors Ed. Mulder, J. W. Gunning and Von Baumhauer, but especially by professor J. H. van 't Hoff, to whom the chair of chemistry in the newly-reorganized Amsterdam University was entrusted, which he held until 1895. Professor Van 't Hoff soon won universal celebrity both for his theoretical and his experimental works. He instilled Dutch chemistry with new life, introduced a new era and laid the foundations for stereo-chemistry. From 1896 till 1911 he was professor in Berlin. After his death his scientific labours have been carried on by his pupil, the Utrecht Professor Ernst Cohen. Among the other conspicuous Dutch modern chemists we honour the names of the Professors Van Bemmelen, Franchimont, Hoogewerff, Lobry de Bruyn, Eykman and the late Doctor Greshoff, director of the "Colonial Museum" at Haarlem.

The scope of this book does not allow of entering into too many details on this department of scientific life in Holland. Suffice it to say that the professors of chemistry in our universities at Amsterdam, Leyden, Delft, Groninguen and Utrecht are continually and sedulously engaged in opening up broader views in the extensive fields of organic and inorganic chemistry.

Classic and semitic literature.— The study of classic literature and of philogy generally may be said to a slight extent to have indicated the lines followed up by modern Dutch literary artists.

With a few words I have already alluded to the instruction of classic and oriental languages at our universities when I touched upon the subject of theological training in Holland. A professorship for Hebrew had been instituted at an early date, whilst a number of eminent Arabic specialists had received their training at the Leyden University, where they profited largely by the precious collection of Oriental manuscripts for the main part bequeathed by the "Legatum Warnerianum". For the Dutch language no special professor was appointed until 1797, whilst only in recent times the three "Modern languages", — English, French and German, — have been deemed worthy of being admitted to the curriculum of our universities. Regularly lectures are read on them by professors and lecturers in Amsterdam, Groninguen, Leyden and Utrecht. As yet it has however not been possible in Holland to take a degree in English, French or German.

The organic analytical Laboratory at Leyden.

The Leyden University has always been a centre for the study of classic languages. It is a curious fact that Holland which until the time when its first university was created (in the latter half of the sixteenth century) had not much concerned itself about the scientific study of philology, immediately after took up a leading position in this branch which it maintained for about one century and a half. It is unnecessary and hardly feasible to enumerate here the names of all the notable philologists who worked before the nineteenth century and I restrict myself to stating the fact, that after the year 1800 critical treatment of the classics became more accentuated, whereas later on greater value was attached again to the study of "realia." It was in particular the Leyden Professor A. E. J. Holwerda, afterwards director of the Royal Museum of Antiquities who directed the attention of his pupils to the Greek and Roman archaeology and history, subjects which had been entirely neglected under the influence of Professor Cobet, a neglect which had not been committed at the other universities. However Professor C. G. Cobet (1813—1889) was undoubtedly a man of great genius, who has put his stamp on the study of classic literature in Holland throughout the latter half of the nineteenth century. As a student himself he passed a few years in Italy and not until 1845 did he accept a chair in Leyden. There will be scarcely any philologist who does not know Cobet's "Variae" and his "Novae Lectiones," or who is not acquainted with the periodical "Mnemosyne," which was edited under his guidance?

Cobet's influence may be traced in his pupils, the Amsterdam Professor S. A. Naber, Professor Tj. Halbertsma, the Groninguen Professor H. J. Polak, Professor H. van Herwerden and

Professor J. van Leeuwen, who was the successor of Cobet at Leyden. The last mentioned scholar annotated Aristophanes and with the co-operation of Professor M. B. Mendes da Costa of Amsterdam he commented upon Homer. Professor J. J. Hartman must be cited as one of our greatest latinists.

Particularly in the domain of oriental studies Holland may boast of a number of super-eminent scholars and professors, among whom the Professors R. A. P. Dozy of Leyden, M. J. de Goeje, who is famous for the writing of his "Memoires d'histoire et de geographie orientales" and his successor C. Snouck Hurgronje are perhaps best known to the general public. Professor Snouck Hurgronje, a real prodigy of linguistic learning, is one of the few Europeans whose intensive working knowledge of oriental languages has enabled him to mix with the Arabians, — (he resided at Mecca and lived among the East-Indian Mohammedans for a considerable time), — and who thus gathered most valuable information about the Arabic languages as well as on the subject of the Islam and Mohammedan laws, Mohammedan religion and customs in general. Also Professor Uhlenbeck should not be passed over as a specialist of comparative philology.

In the course of the nineteenth century, the Javanese and Malay languages were also included in Dutch university education. In order to afford an opportunity for practical training to future officers in the East-Indian Civil Service these languages were taught at the Royal Academy at Delft from 1842 to 1863, at the Governmental Institute for East-Indian Civil Service from 1864 to 1902 and at a similar institute at Leyden from 1877 to 1891. After the reorganisation of University Education in 1877 the possibility was created to take a degree in philology and literature of the East-Indian Archipelago. After 1902 future Civil Service officers received university training in Javanese and Malay at Leyden.

I may not in good conscience wind up this summary without mentioning the fact that Ancient Javanese, Balinese and Batak besides Indonesian philology are zealously worked at in Holland. Sanscrit used to be the forte of that great linguist, the late Leyden Professor J. H. Kern. The chair of Chinese, which had been so worthily occupied by the celebrated Sinologist Professor Schlegel, who died in 1903, has been left vacant since Schlegel's successor J. J. M. de Groot went to Berlin in 1911. Moreover an opportunity has been created of studying the Babylonian and Assyrian languages and histories. The chair instituted in 1917 for the Japanese language was allotted to Professor M. W. Visser, whilst Chinese was entrusted to a lecturer Mr. D. J. J. Duyvendak. A special lecturer has also been appointed for the Persian and Turkish languages and for Egyptology.

DUTCH LITERATURE AND HISTORY.— The Leyden Professor Matthijs Siegenbeek (1774—1854) is still looked upon to have laid down the present-day orthography of the Dutch language, notwithstanding it was bound to undergo as a matter of course some more or less important modifications in the course of the last fifty years. His best known works are: "Treatise on Low-German (Dutch) Orthography" (1804) and "Dictionary for Low-German Orthography" (1805). Siegenbeek's orthography was officially followed until 1883, when it was materially revised by the Professors L. H. te Winkel and M. de Vries. Especially under the leadership of Dr. R. A. Kollewijn continual endeavours are being made to simplify our orthography. In this year proposals have been submitted by a State Commission to this effect.

Perhaps it would not be out of place in a book like this, the principal purpose of which is to direct the attention of foreigners to our country, to give a survey of the thorough study of the Dutch language and Dutch literature as undertaken by the students of our vernacular, were it not that to make a selection would be extremely difficult and that moreover we should have to go through the whole field of our classic literature for it. A large number of excellent books on the subject may freely be consulted in our numerous university, municipal and other public libraries. Writing a purely synoptical book I must refrain from enumerating all the titles of such works and I even resist the temptation of naming any. The reader may believe me however when I assure him that classic and mediaeval Dutch literature is in no way less important or attractive than that of any other cultured nation in the world.

The same holds good for the study of Dutch history, a branch which has always enlisted the sympathy of a great number of devoted students as long as scientific research has attracted Dutchmen. During the seventeenth and eighteenth centuries our universities knew no special chairs for History of Holland and History of the World. It was not until the beginning of the nineteenth century that the reading on modern history was entrusted to Professor M. Siegenbeek at Leyden and to Professor N. G. van Kampen at Amsterdam. The latter must be commended for having disclosed many remarkable episodes in the History of Holland to students of history abroad. In the year 1849 Professor R. Dozy began his lectures on the History of the World at Leyden, while in about the same year this department of historical investigation was broached at Utrecht by Professor W. Brill and by Professor W. Hecker at Groninguen. The celebrated Professor Robert Fruin was the initiator of critical-historical enquiries, in which he followed the route indicated by his older friend Bakhuizen van den Brink, the author of a number of highly interesting historical sketches.

Fruin's book "Tien jaren uit den Tachtigjarigen Oorlog" (Ten Years of the Eighty Years' War) published at Leyden in 1857 and since having been reprinted five times, may be taken as a model of historical research and historiography.

Although Professor Fruin did not found a school nor ever wanted to do so, he has had a great influence on the younger generation of Dutch historians. As history is a science in which foreigners are likely to take an interest I should wish to say a few more words about the subject "History of Holland." As most distinguished among Dutch historians after Robert Fruin I cite Professor P. L. Muller, first at Groninguen, afterwards Dozy's successor at Leyden, who wrote "Onze Gouden Eeuw" (Our Golden Age) and "Geschiedenis van Onzen Tijd" (A History of Our Times), published at Harlem in 1902; further the Groninguen historian, Professor P. J. Blok, afterwards professor at Leyden, who is the author of "Geschiedenis eener Hollandsche Stad in de Middeleeuwen" (History of a Dutch Town in the Middle Ages) and of "Geschiedenis van het Nederlandsche Volk" (History of the Dutch People), published at Groninguen and Leyden respectively at 1891 and 1908; then Professor Th. Bussemaker, appointed at Leyden in 1905 and deceased in 1914, the well-known writer of a history of the separation of the Walloon districts, which appeared in Harlem in 1896; then Professor G. W. Kernkamp, first of Amsterdam and afterwards of Utrecht, who specialized in the history of the Baltic trade; next Professor H. Brugmans, his successor at Amsterdam, who has taken up commercial history and especially that of the town of Amsterdam as a favourite subject; then Professor J. Huizinga of Groninguen and Leyden successively, who is a famous connoisseur of the history of Dutch aesthetics; finally Professor J. E. Heeres, a devotee of Dutch colonial history. Of late years N. W. Posthumus, professor in the new Commercial University of Rotterdam, has gained a great reputation as a writer on the history of economics and in this respect bids fair to be one day the acknowledged successor of the famous Dutch economist Pierson. Quite recently the want of a chair for peadagogy has been supplied by the appointment of the well-known Professor R. Casimir. Though not directly pertaining to this section of the book special mention must be made of the "Koninklijk Nederlandsch Aardrijkskundig Genootschap" (Royal Dutch Geographical Society.)

OUR ARCHIVES.— It would not do to leave out from the present chapter a few notes on Dutch archives, which are highly reputed both in and outside our country.

Keeping archives has been given attention to by the Dutch Government for more than a century past. On the 17th of June 1802 H. van Wijn L. L. D., was called to the office of Archivist to the "Bataafsche Republiek" (Batavian Commonwealth). Originally the National Archives were exclusively formed by collecting all such documents as might be regarded to bear upon the history of the country, thus composing a library of MSS of historic origin. The archivist's duties consisted in sorting manuscripts, recording and amending them, so that in the first place he had to be an historiographer also. The principal representative of this old school was Bakhuizen van den Brink, Royal Archivist form. 1854-1865. It was he who for the greater part effected the concentràtion of the general national archives and the archives of the former province of Holland until 1813 in the "Logement van Amsterdam", situated at the "Plein" in the Hague, at present the Foreign Office Buildings. In his time the principle of allowing publicity to old archives on behalf of scientific research was for the first time adopted, — regulated by Royal Decree of the 26 th June 1856, No. 79, recently substituted by that of 30 October 1903 No. 29. — in which an example was given to many other countries.

Under the influence of Jonkheer Victor de Stuers L.L.D., director of the Art and Sciences Department in the Home Office, instituted in 1875, the system of keeping archives was organized on a larger scale still. He was succeeded by Mr. J. A. Royer and, quite recently by Mr. M. I. Duparc, L.L.D. The archives until 1813 of the several provinces came under the official management of the State and at present each of the eleven provinces of Holland has its own department of archives. Besides these provincial departments there are the General National Archives at the Hague, comprising those of the Central Government and at the same time those of the province of South Holland, in which the Hague is situated. Sometimes special buildings have been erected for the provincial archives in the capital of each province and in other cases some building has been made fit for the purpose. The building for the General National Archives was inaugurated at the Hague in 1902.

In 1879 the old juridical archives until 1811 were transferred to the respective provincial departments. The same was done in 1907 with the notarial documents until 1811, whilst in 1904 the archives of the several ministries (or Departments of General Government) until 1830 were united with the General National Archives.

At the same time the more modern views prevailing under archivists themselves led in 1891 to the foundation of the Association of Dutch Archivists. In the "Handleiding tot het ordenen en beschrijven van archieven" (Manual on the Arrangement and Registration of Archives), composed in 1898 by the jurists Muller, Feith and Fruin, translated into the French, Italian and German languages, the lines are suggested along which the keeping of archives should develop. The principal idea is that by archives we no longer understand an arbitrarily compiled collection of historic MSS, but the whole of the documents either lodged with or issued by a certain college and intended to remain permanently deposited with that college. Consequently the archives have to be arranged according to the origin of the documents and the classification of the same must in every respect tally with the organisation of the management. Hence the drawing up and the publishing of catalogues and "regentenlijsten" (lists of guardians of institutions) is nowadays the main part of the archivist's activity, whilst the amending and editing of the records themselves is now confided to the historiographer proper and is no longer a task allotted to the archivist. The historio-graphical handling of Dutch archives is at present entrusted to the care of the Commission for National-Historical Publications.

Members of the Association of Dutch Archivists are also the archivists of the municipalities and conservancies of Holland. The duties of those have hitherto not been very clearly defined, as the various municipalities and conservancies are still each master of their several archives without the Central Government interfering with the care of them. The Dutch Government however has now been authorised among other things to prescribe governmental regulations for the keeping of such archives, if necessary.

On the National-Historical Publications special stress may be laid. The above Commission, of which Doctor H. T. Colenbrander since its foundation was director and secretary, was instituted in 1902 with a view to adding in a more systematic way to the knowledge of Dutch history by the publishing of sources of information themselves. Dr. Colenbrander, who is now professor at Leyden has been replaced by the sub-director Dr. N. Japikse. Among its publications, of which nearly sixty volumes have already seen the light , the principal are "Gedenkstukken der Algemeene Geschiedenis van Nederland van 1789 tot 1840" (Monuments of the General History of the Netherlands form 1789 to 1840), edited by the said Doctor Colenbrander. The Dutch Institute for Historical and Art-Historical Research at Rome, founded in 1904, goes in for a systematic investigation on Dutch "Archivalia" in Rome and Italy. The initiative was taken by Professor Blok at Leyden. Dr. Gisbert Brom, who died at an early age, was the first director and was succeeded by Mgr. Professor A. H. L. Heusen. The secretary Dr. G. J. Hoogewerff, is charged with the research after data for Dutch Art-History.

DUTCH LIBRARIES. — The great variety noticeable in the whole of Dutch libraries is a faithful reflection of the historical development of our national culture. Each subsequent era of our history has left us new collections of books, which either in their original composition or mixed with alien works bear witness of the attainments of our forefathers.

The history of Dutch libraries may be traced back to the Middle Ages, when famous monastic libraries were already extent, such as at Egmond, at Wittewierum (the Bloemhof), the monastic libraries of the Windesheimer congregation, etc. Although these libraries became utterly disorganised in consequence of the Reformation, MSS and old prints may be found still in the larger libraries, having been preserved from the olden times. The town of Zutphen is proud of its "Librije", a library that was founded in the middle of the 16th century after the example of the monastic libraries.

The rise and prosperity of Dutch towns in the 16th century conduced to the foundation of public municipal libraries, which to-day survive at Gouda (from the middle of the 16th century) and at Harlem (from 1596). Whenever a town, possessing such a library already, later on received a university, the municipal library was united with that of the university (Amsterdam 1578, Utrecht 1584).

In addition to these there are the libraries that largely contributed to the world-wide repute of the 16th-century's universities, as for instance the one at Leyden, whose library, the oldest of all, was inaugurated in 1575 together with the university itself. That of Groninguen followed in 1615. In the 19th century, when technical University Education generally came to the fore, the number of Dutch university libraries was still increased.

Furthermore a great many libraries have been established on a smaller scale, which speak well for the scientific bent in the Dutch. Some of the principal are those of the "Teyler Institution" at Harlem and of the Royal Academy of Sciences at Amsterdam, further the provincial ones such as at Leeuwarden and at Middelburg. The library of the Provincial Society of Arts and Sciences at Bois-le-Duc in the province of North Brabant is remarkable for the complete history of that province, as one of the former "Generality Lands".

Apart from all these and similar libraries instituted under the auspices of corporations, a very fine example of popular love of science is presented by the Thysian Library at Leyden, founded in 1655, which is an outcome of one of the many collections that were made at a time when wealthy patrician merchants vied with each other in forming cabinets of curiosities, paintings and books. Another example is afforded by the Buma-library at Leeuwarden, exclusively intended for the study of the classics and which subsists entirely on a bequest of the late doctor L. A. Buma of Makkum in Friesland.

Royal library at the Hague.

In Holland, which was so long a republic, court libraries, such as are to be found in France and England, were naturally not apt to germinate. However, a small collection of books, left from the period of the Stadtholders, became the germ for the "Royal Library" at the Hague, which was created in the 19th century. This library, from its very nature, differs materially from the ordinary university libraries, inasmuch as it is a cultural rather than an educational institution. Especially under the present librarian its collections have materially increased, so that it bids fair to be, in the near future, one of the most comprehensive libraries of our country. Humanitarian tendencies prevailing towards the end of the 18th century, gave origin to the "Maatschappij tot Nut van het Algemeen" (Society for the Benefit of the Public). From its very outset this society has undertaken the establisment of popular libraries, of which as many as 300 and more are now in existence. They are meant to satisfy the literary tastes of the lower classes. Some of these libraries have attained great prosperity, notably the one at the Hague and that at Amsterdam. Of late years the society has, moreover, been organizing "itinerant libraries", especially on behalf of the inhabitants of provincial towns.

In the 19th century a number of libraries were also instituted for the more cultured and well-to-do middle classes, the principal being the "Leesmuseum" (Reading-Museum) at Amsterdam (1800) and the one at Rotterdam (1859).

Quite a novel type of public reading-rooms and libraries, which may be compared with the English Public Libraries and the German "Bücher- und Lesehallen", arose towards the end of the 19th century. The general rise of these libraries, some 40 of which are now to be found in Holland, was largely due to the vigorous development of elementary and secondary education in the course of the last decades of the 19th century. They do not solely appeal to the reading interests of the lower classes, nor to those of the more cultured middle classes; neither are they intended for scientific purpose, but they have been constituted with a general view to serve for all those who are desirous to consult books either for recreation or for study. Part of them are non-sectarian and some have been founded on denominational principles. They are subsidized by the Government and constantly increasing.

Besides all these various kinds of libraries there are a great number of school-libraries and libraries belonging to ministerial offices, archives, corporations, etc.

A manual of the principal Dutch libraries was published in 1913, whilst a collection of eight descriptive essays affording a synthesis of what is done along the lines of Dutch libraries, came out in 1914.

From the record of Dutch arts and sciences given here it may appear that the Dutch have to the present day lived up to their traditional and proverbial love of the various branches of arts, learning and sciences.

CHAPTER V — DUTCH AGRICULTURE, CATTLE AND FISH

Is Holland a land of wine and oil?—Join hands.—A bouquet of Dutch flowers.—In the bulb-fields.—Dutch vegetables.—Dutch fruit.—The motherly care of the state.—The primary type of Dutch cattle and their proportionate numbers.—Governmental care in the interests of horned cattle rearing.—Farms and livestock.—The dairy produce of Holland.— The organization of the Dutch dairy produce industry.— An historical outline of Dutch fisheries.—Fishing in the North-Sea.—Coast and Zuyder-Zee fisheries.

IS HOLLAND A LAND OF WINE AND OIL?—The great American writer Motley once couched his opinion on our agriculture and cattle-rearing in the following typical terms:

"Their cattle grazing on the bottom of the sea are the finest in Europe, their agricultural produce is of more exchangeable value than if Nature had made their land to overflow with wine and oil." Leaving aside Motley's metaphor on Dutch cattle as "grazing on the bottom of the sea," I at once call attention to the fact that although our country yields a great many valuable products from its fertile soil, we cannot by any means reckon wine and oil to belong to our national treasures.

In the present chapter I shall try to demonstrate that Dutch soils are capable of showing excellent results in the intensive cultivation of a good many agricultural products.

It is indeed the divergent geological character of these soils, which naturally contributes to the cultivation of such a great variety of produce. According to the condition of the soil and the occupations in connection with the same we discriminate between six main divisions.

Marine clays with farming and mixed occupations. These grounds are generally characterised by the more important agricultural activities. In some districts however we find a considerable number of smaller occupations which are chiefly concerned with those agricultural growths that involve much human labour, such as: potatoes, sugar-beets, onions, beans, etc., as well as with market-garden vegetables. Grasslands and arable lands are of varying proportions. Generally speaking, agriculture has attained a high degree of development upon marine clays. Corn-growing on the other hand has diminished on them of late, with the exception of the marine clay soils in the province of Groninguen and some smaller districts in other provinces; it now occupies not more than a fourth or a third part of the ploughland. Besides grain and pulse a great variety of vegetation is being reared for commercial and industrial purposes, among which potatoes and sugar-beets have come to be the principal. The stoppage of food supply from abroad gave rise to potato-growing on an immense scale. Whilst before the war it covered an area of 400.000 acres, it now occupies 425.000 acres, viz. 345.000 acres for clay and sand potatoes used for consumption, and 80.000 acres potatoes intended for factory use.

Fluvial clays with mixed occupations differ from the above lands not only as regards condition of the soil but as to the nature of the occupations as well. Since the large occupations were being divided more, the smaller ones have developed proportionally. Grassland preponderates here. Next to grain, potatoes and beets are extensively grown in the majority of these districts, especially by small farmers. Growths intended for commercial purposes are not much cultivated here.

Fruit-culture on the other hand is a special feature in orchards with grassland.

Pasture lands are found in those districts where the soil is used almost entirely as grassland. The farms usually have an average extent from 37½ to 75 acres. Larger as well as smaller ones are comparatively rare. The soil consists for the main part of low fens and clays. During the last few years ploughing up of grass-land has been done more and more in order to grow articles of food. Waste lands and forests cover an extensive area. On the whole the surface of ploughland and grassland are in equal proportions, though this is not everywhere the case. The foremost among ploughland products is rye; next come oats and potatoes. Buckwheat has of late years been far less cultivated. Grain may be said to grow upon seventy percent of the ploughland on an average Formerly this grain was mainly intended for sale, but at present, apart from war-times, it is used for fodder together with large quantities of more substantial fodders. Financial profits however are then chiefly afforded by milch cows, pigs and poultry. During the war this occupation has been altered according to the requirements. The farms are generally small and occur in various forms; from seventy to ninety percent of the soil is cultivated by farmers with less than 50 acres of land each.

Hundred-year-old pine trees in the "Mastbosch", near Breda.

Fen-colonies in the real sense of the word are only met with in the northern province of Groninguen. There are two districts that may be considered to belong to them, though they are of a different type. First the fens and sandy tracts of the province of Drente, the principal part of which pertains to the fen-colonies, whilst the rest is a sandy plain; the second being the "Wold" region in the province of Groninguen, which is not a real fen-colony, still as for the occupation followed there is much in common with the ordinary fen-colony. The Groninguen fen-colonies proper are formed by the older fen-colonies, as contrasted with the newer ones that have been established in the provinces of Drente and Overijssel. The soils, which before were high fens, have now almost entirely been dug for peat. The underlying soil, which was thus laid bare, is covered with a layer of lump earth mixed with sand and brought under cultivation with great success. The farming is very intensive and quite in keeping with modern views of agriculture. Potatoes are the chief crop and occupy all but half the surface of the ploughland. Next come rye and oats. Owing to a lack of manure in the fen districts, artificial manure is used in considerable quantities, in fact to a larger extent than anywhere else. Cattle-breeding is very perceptibly decreasing since cattle was no larger required for the getting of manure. Over against 44358 acres of ploughland there is about 6567 acres of grassland, whilst 1865 acres are devoted to horticulture. In the chapter dealing with "Industries" I shall have occasion to discuss the important potato-flour industry and strawboard industry. Besides husbandry, horticulture is largely on the increase of late years, especially in the towns of Hoogezand and Sappemeer. The majority of farms cover an area of 25 to 75 acres. Neither very large farms nor decidedly small ones are the features here. Nearly seventy percent of the surface is occupied by the landowners.

To the districts employed for horticulture we may also consider to belong those soils where husbandry and cattle-breeding as well are highly developed, though horticulture is the distinctive feature of the land. There are some other tracts of land, especially in North and South Holland, which are largely used for horticulture, but where it is not of so great an importance that it may be said to be a peculiarity of the district.

The number of people engaged in agriculture, stands in peculiar relation to the capitalized estimate stated above; according to the latest professional census this number is equal to 30 % of the whole population. Those who subsist on agriculture indirectly, decidedly make up a number of 15 % more, so that we may say that two-thirds of the Dutch population, either directly or indirectly, earn a living in the cultivation of their native soil, including that part of the nation which is engaged in cattle-breeding.

In ordinary circumstances our agricultural produce is chiefly intended for export. A good deal of it is raised in far too great quantities for home consumption only, but the cultivation of other crops, -- such as cereals is quite insufficient to satisfy the national demand. The serious consequences of this made themselves felt in the critical years of the late war, when both the export of part of our farming products and the import of other necessities was greatly hampered, even rendered impossible sometimes.

This book, treating of Holland in the present day, does not at all purpose to give an impression of Holland during war-time, nor does the writer intend to give special attention to the critical conditions consequent on it. On the contrary, it wishes to portray in rough outlines a purely objective picture of the Netherlands, as they appear in modern times, for those who take an interest in the country. This plan has been strictly adhered to in the present chapter on our agriculture and will by no means be given up in the subsequent parts of the book, dealing with other important national means of subsistence.

JOIN HANDS.—Some 35 years ago a new plan was more or less extensively put into practice for the furthering of the material interests of the peasantry. Co-operation was introduced in the purchase of farming-implements, the working-up of materials, insurance and finance matters, in the improvement of live-stock, etc. In a few places some associations had been established before, for the purpose of mutual insurance in case of damage caused by fire, hail and cattle-plague, but for the rest there was hardly any co-operation worth speaking of. Only when the influences of a general fall in prices of agricultural produce and of keen competition from abroad, together with those resulting from application of scientific research in farming, made themselves felt, did a general revolution in the practice of agriculture and in the methods of disposing of agricultural produce set in, which went hand in hand with the universal adoption of co-operative systems. Especially in the course of the last 25 years did this strengthened belief in co-operation come to the fore in agricultural circles.

Co-operation in agricultural matters was characterized by its having been originated and promoted entirely by private initiative. Only for the promotion of reciprocal credit in farming transactions and improvement of horse- and cattle-breeding, financial support was solicited and received from the Government. In other respects, however, these co-operative associations enjoyed governmental support, in so far as they profited by the introduction of some regulations, largely conducive to the credit of the associations, but not availed of by all alike.

Agricultural co-operation is not everywhere applied in Holland. It was especially favourable local conditions which tended to promote its adoption, because the co-operative factory handling of agricultural produce necessarily postulates the presence of such produce in an immediate neighbourhood.

Aalsmeer, the centre of flower cultivation.

I should further like to emphasize the fact that husbandry in Holland is almost exclusively followed by small farmers, so that it may be considered as one of the chief sources of national subsistence.

A happy phenomenon, indeed. In Holland there are hardly more than two dozen farmers each possessing more than 500 acres of ploughland, whilst there are not more than about two hundred farmers whose lands exceed the area of 250 acres. On the other hand no less than 182011 farmers hold from 2½ to 50 acres of arable land, out of the 200302 officially recognized farmers. Now a farmer in Holland is only officially recognized as such, if he holds at least 2½ acres of arable land, but as the number of small holders who do their work on a much less extensive area, is extremely great in Holland, our statement that husbandry is one of the foremost among means of subsistence, will not be contested. It is especially market-gardeners who act as cultivators of areas less than 2½ acres. During the late war, small-scale farming enormously increased. It is also a favourable circumstance that the majority of Dutch agriculturists and horticulturists possess their lands in freehold. Generally speaking we may say, that the greater half of Dutch arable land, — which occupies about 25 % of the total surface of the country, — together with 3 % used for horticulture, is cultivated by the owners themselves. The beneficial consequences of this state of things reflect themselves in the general prosperity which Dutch husbandry enjoys.

A BOUQUET OF DUTCH FLOWERS.— After having pointed out the great importance of Dutch agriculture, which in fact is obvious enough to any one who only in passing can cast a glance over our country, we shall now turn our attention to the characteristic Dutch art of flower-gardening.

The practising of this branch of industry has gradually also become an important means of national subsistence. The practical knowledge and experience of many generations of horticulturists proved to be an excellent guide, even when the principles of modern science came to be an additional help in the cultivation of flowers, trees, vegetables, fruit, bulbs and seeds.

Among the occupations of the florists in the provinces of North and South Holland in keen competition with foreign countries, we now principally note the cultivation of aestival flowers in the depth of winter, which are to be seen in our homes, standing out in their full splendour and fragrance during the whole year, the flowering being artificially hastened, and retarded by means of ice.

Tulip field.

The well-known village of Aalsmeer is the centre of flower-cultivation in winter. This village owes its origin to the drainage of the Haarlemmermeer-polder, as discussed in one of the preceding chapters, and consists for nearly a third part of a network of canals, by which a great many gardens are encircled. Gardens are gradually growing larger here, because the reed-sods that form in the shallow waters at the edges of the gardens, are made firm by filling them up with mud and refuse from hothouses.

Several nurseries date back from olden times, older than 250 years. The surface rises only 1½ ft. above the level of the water in the ditches and consists of bog. By regularly dredging the ditches and depositing the mud on the soil, it is possible to rear the same plants continuously on the same spot. After the year 1860 the general cultivation was gradually given up for the rearing of azaleas, clematis, holly, magnolias, spruces, lilacs, conifers, peonies, rhododendrons, roses, etc.

Among the bushes and shrubs that lend themselves especially to the process of forcing, we cite the various magnificent specimens of rhododendrons, reared in a large number of varieties by means of cross-fertilization. It looks as if Dutch florists have wanted to show their neutrality in this cultivation, because for each of some well-known kinds they chose a name of another foreign nationality: the "Jacksoni" for early forcing, the "Prince Camille de Rohan" and the "Frau Wagner" for the later forcings.

Soon after New Year the large, dazzlingly white, Guelder-roses are forced into blooming. There are two species: the "Virburnum Opulus" and the "Tomentosum", the flowers of which are already cut off when they are still light green. They come to their full development and splendour on their way to their destination both at home and abroad, or behind the plate-glass windows of foreign flower-shops and in the flower-baskets of the conservatories far from home.

The "Deutzia gracilis" is sold in pots when in full bloom; further there are the lilies of the valley, which are in flower already in the depth of winter. Then roses, which are not usually forced until February in this country. After growers in the Southern provinces suffered losses during the last few years on account of the war, there has been a tendency prevalent to hasten the flowering of roses in Holland. So various species are prepared for dispatch in the very beginning of the year, such as: "Caroline Testout" (Pink colour), "La France" (pink), "Keizerin (the Empress) Augusta Victoria" (creamy white), "Ulrich Brunner" (cerise colour), "Maman Cochet" (carnation pink and white), "Witte (White) Maman Cochet" (yellowish white) and the "Frau Karl Druschki" (white).

The beautiful and vigorous chrysanthemums are cut as early as October until December.

It looks as if the florescence of Dutch flowers is brought to its culminating beauty in winter. Whilst in summer the whole country from the motley woods to the gay-flowered meadows and ditch-edges resembles one large flower-bed, national floriculture is most zealously practised in the dull winter-time.

For all that, Dutch floriculture originally developed within very modest limits. It is hardly forty years ago that the first hothouse was established in this country. It is true, stocks, wall-flowers, carnations and roses had already been reared before, but in an extremely primitive way.

When forcing in hothouses had once been started, the results, though rather slight in the beginning, soon stimulated to more vigorous activity. The primitive smokeducts in the hothouses were replaced by hot-water pipes, the budded flowers now proved to be larger, more variegated and more fragrant than even the best products of southern countries.

More than 1½ million sprays of lilac are forced every winter.

The stems of cut roses have a minimum length of 1½ ft, one of the principal conditions for vase- and bouquet-roses.

Not less than 4 million roses are cut, while 2½ million lilies of the valley are produced; besides stocks and marguerites. Callas and tuberoses have been more extensively cultivated of late years, next physalis and honesty. The last two flowers for more durable bouquets. Moreover ferns and asparagus are largely grown and used for the arrangement of nosegays.

Among the cheaper plants pelargoniums (popularly called geraniums) fuchsias, cinerarias, heliotropes, mignonettes are sold in flower-pots and of the early blooming plants cowslips and cyclamens are used as indoor-plants.

The rearing of cut flowers and especially the forcing of various shrubs in winter, thus became a matter of special pursuit in horticulture.

Enormous quantities of pot-flowers in bloom are regularly marketed in the larger towns towards the end of spring. The little village of Aalsmeer supplies Amsterdam with 100.000 to 150.000 pot-plants every week.

But this is only part of the total Dutch floriculture. At present Dutch hothouses, if necessary, could supply even the whole of Europe with cut and forced flowers.

The South being practically blockaded during the late war, Holland became a large European supplier of flowers, but this could only continue as long as our own export was not stopped too.

In the beginning of the war the export of chrysanthemums, roses and lilacs was not unfavourable.

Is it, perhaps, our neutrality which gave rise to this? Were our flowers intended to celebrate victories or to decorate the graves of the fallen soldiers?

Trumpet daffodil.

Our floriculturists have not asked for reasons, but goods trains full of Dutch forced flowers were despatched to Germany, whilst enormous quantities were shipped to England and America from Amsterdam and Rotterdam per every shipping opportunity available.

Hence, one of the outcomes of the terrible war abroad was that, especially in the beginning of it, Holland gained a name of honour in the foreign flower-markets all over Europe. Although Dutch flower and plant growers have also had a very hard time of it, in view of transport difficulties and the check put on export, there is every hope that this important industry will recover its significance in course of time.

In the bulb-fields.— It is almost certain that the favourable reception our forced flowers have at once met with, as soon as they were introduced into foreign markets is to a large extent due to the worldwide repute which that ancient and typically Dutch industry of bulb-growing has enjoyed from times immemorial.

In the early spring, when the bare and leafless landscape still offers a wintry aspect, it is extremely gratifying to the eye to gaze upon the richly coloured scenery between Harlem and Leyden. However, the bulbfields are yearly being extended both to the north and to the south of these towns, from the island of Texel to as far as the Zealand islands.

He who wants to enjoy other and more vivid tones in the Dutch landscape than its customary and mystic silver-gray half-tints, may indulge his fancy by having a look at the hyacinths and tulips in the month of April. Suffice it to mention here a few of the best known species that break through the cold soil towards Eastertide.

Some hyacinths are wrapped in a glossy, snow-white garb. Such is the colour of the white "Madame van der Hoop" and in a softer shade of the "Innocence". By the side of these figure the thick bunches of the "Queen of the Blues" in a tenderly blue hue, the "Grand Maître" with its tapering flowers in a deeper blue and the "King of the Blues" in a deep purple-blue. Among these the yellow hyacinths burn as a symbol of envy: the "Obelisque" like a knight in a gold armour, the rounded softer tinted bunches of the "King of the Yellows", glittering like burnished brass. Brightest of colour are the red hyacinths, dappling the vernal fields with blood-red pools; the loud red of the "Vuurbaak" (Beacon) and the flaming red of the "Roi des Belges".

In the midst of this glowing motley, stretching as far as the eye can reach, rise the villages of Katwijk, Noordwijk, Sassenheim, Lisse, Hillegom, Bennebroek and Overveen, all centres of bulb-growing in the provinces of North and South Holland. Tulips too have an early florescence, sporting in exquisite, prismatic colours; the glowing "Parkiettulp" (Paroquet-tulip), toning from red to yellow, the "Précieuse", of a soft red, the "Jagt van Rotterdam" and the "Joost van den Vondel", the "Darwin-tulips" in their deep tints.

The centuries old art of the floriculturists has transfigured the jejune sandy soils of the North and South Holland dunes into rich fields, presenting as they do to our sight both the white colours of the Polar regions and the red of the Indus and Euphrates, the blue of the Italian lakes and the purple hues of the setting sun at sea.

Although a good many varieties of bulbous plants are grown in the bulb-district proper, yet hyacinths, tulips and daffodils are by far preponderating.

Growers generally cultivate other growths as well, both fore and after-growths: vegetables, etc. (carrots, beans, potatoes, cabbage-lettuce, cabbage).

After the harvest, in June and July the dug bulbs are dried on racks, whilst the tulips are "pared", i.e. the young bulbs are cut off and planted once more in order to grow larger and become marketable, while the motherbulb is intended for sale. Young bulbs of hyacinths are artificially made to grow. Only 5 years after they have budded out on the mother-bulb are the young bulbs of hyacinths fit for the market.

✓ The splendour of Dutch flower-bulbs may best be admired when we travel along by rail from Leyden to Harlem. For a better insight into the intrinsic importance of this cultivation, however, we had better go to the history of the country. In fact, the time-honoured tulip and hyacinth trade is a characteristic point in the commerce of Holland.

Both flowers have been introduced from the East; — the Dutch word "tulp" (tulip) is connected with the Persian turban and the original home of the "hyacint" (Dutch for

Hyacinth-field.

Hyacinth.

hyacinth) must be traced further back than the native soil of the French pulpit-orator of the name; — but for all that, the world-wide reputation of both flowers has been established in this country. In the seventeenth century the first rare flower-bulbs gave rise to a rash speculation, which resulted in a certain national panic (the tulip-swindle of 1637). In spite of this a bonafide, scientific cultivation of tulips was undertaken in the neighbourhood of Harlem. Even in former centuries this remarkable Dutch product was known all over the world. Already in the eighteenth century Harlem florists had their foreign catalogues printed in English, French and German. The rearing of hyacinths followed only a century after tulips in the same district, though the first bulbs had been imported into Holland by foreign travellers as early as the 15th century.

Dutch bulb-growers have maintained their fame ever since, thanks to the peculiar condition of that narrow patch of land, which proved especially fit for bulb-growing, not to forget the extraordinary skill of the growers themselves, exhibited in the practising of this technically difficult branch of industry throughout the past three centuries. The cultivation of the hyacinth and a number of other bulbous plants (lily, iris, gladiolus, sparaxis, ranunculus, anemony, paconia) requires no less technical knowledge than that of the tulip.

With the exception of tulips and daffodils, the sale of bulbs is extremely profitable to growers, as their customers may only enjoy the possession of them for the period of one year, or two years at most, so that they have to come back to the grower for new plants. With fruit-trees, ornamental shrubs and perennial plants this is not necessary of course. The bulbs must bloom on the reserve-nutriment. As soon as this is spent the bulb must die. The cultivation by means of young bulbs does not lie within the capacity of the non-expert, who besides, has not the necessary time, knowledge and opportunities.

The aggregate number of flower-bulbs and bulbous plants exported to all parts of the world, especially to the United States of America and to England, during the year 1914, is approximately estimated at 25 million kilograms. In the last few decades large quantities, especially of tulips and daffodils have been grown outside the flower-bulb districts proper, namely on clay-soils. Since 1860 the range of the bulb-fields has been extended from 750 to 13750 acres.

Dutch vegetables.— The rearing of certain seeds, especially those used for the cultivation of vegetables and flowers, has considerably increased during the last 25 years. About 5000 acres of land are employed for this purpose in the province of North Holland all round the town of Enkhuizen and upwards of 2500 acres in the province of Groninguen. This cultivation must be considered as a special branch of horticulture. In the year 1913 an approximate number of 2 million kilograms of vegetable- and flower-seeds were exported. Imagine the vast area that may be sowed with this quantity.

Let us now proceed to the cultivation of our national vegetables and then pass on to our fruit.

Owing to peculiar circumstances both these occupations form considerable sources of national subsistence, conferring on our country a name of international repute far beyond our boundaries.

Our market-gardening is almost sufficient to satisfy the home demand, which says a good deal, if we consider that at least one or two vegetables regularly figure on our daily bills of fare and, what is more, the provinces of North and South Holland and Limburg yield enormous quantities for export, among which are various vegetables of the cabbage kind, cauli-flower, early potatoes, cucumbers, tomatoes, onions, Brussels sprouts, peas and beans, spinage, carrots and salads.

Many country people raise their own vegetables. The larger towns are usually supplied on certain market-days every week by market-gardeners living in their neighbourhood. Near some towns market-gardening has extended so much, that there are many buyers who come from other towns and even from abroad on market-days. Of late years co-operative auctions of vegetables and fruit are the feature everywhere throughout the country. Uniformity in packing, weight and the assortment of qualities has proved extremely profitable to the market-gardeners. The managing boards of the auctions warrant a proper treatment in the delivery of the wares by imposing large fines and other sorts of penalties on the gardeners for unfair dealings.

Besides market-gardening around the Dutch towns, which is pursued on a pretty extensive scale (many gardeners are rather farmers than townspeople), a huge cultivation of vegetables is also practised in other districts, which renders it necessary to destine enormous quantities for export. There are regions where all sorts of vegetables are grown; in other districts, however, the cultivation is confined to some special kinds. The enormous export of vegetables was all but totally stopped in war-time. The "flat-glass system" plays an important part in the modern way of growing vegetables. The flat glass covers cold and hot frames in which vegetables are forced. Furthermore there are hothouses used for the forcing of tomatoes and cucumbers. The cultivation of these crops was started in the beginning of this century. The forcing is effected either above the surface of the ground by means of hotwater or steam-pipes or under ground with the help of steampipes only. Especially in "Westland" (in the province of South Holland) the forcing of cucumbers has proved a great success. Those who are fond of "primeurs" do not really get them. They only get their vegetables a few months earlier than other people. Of quite a recent date are the so-called "warenhuizen" (emporiums), where all kinds of vegetables are grown together in one and the same hothouse, just like in a garden. They practically are kitchen-gardens with glass overhead, in which the growers can do their work standing upright. Sometimes they are heated artificially, sometimes they are not.

As a matter of course, a much larger area of land is employed for ordinary

Orchard in spring.

market-gardening than for cultivation by means of forcing. Horticulture is naturally more intensive than agriculture. In our country, one acre of land used for horticulture requires five times as much human labour as one acre of plough-land, on the average.

From the following figures we may gather the conviction that horticulture is of great importance for our national subsistence. Among the horticultural products exported in the year 1913 were 26 million kilograms of closed cabbage, 19 million kilograms of cauliflower, 51 million kilograms of onions, 46 million kilograms of gherkins and cucumbers, 80 million kilograms of various other vegetables, 330.000 kilograms of desiccated vegetables, 88.000 kilograms of vegetables cured or pickled and 3.400.000 kilograms of vegetables preserved in another way, all this approximately. The system of desiccating vegetables has considerably extended in the course of the late war and is likely to be further applied in the future. Owing to the extremely low percentage of aqueous substance, desiccated vegetables require much less cost of carriage and package than vegetables that are sterilized and pickled.

Grape cultivation under glass.

"Westland" and the neighbourhood of Rotterdam, Delft and Schieland, Zwijndrecht, "de Langendijk" (a district in the province of North Holland), and the province of Limburg are centres of market-gardening and dispose of part of their products in the Dutch market, whilst the greater part is despatched to foreign countries.

DUTCH FRUIT.— Let us now pass on to Dutch fruit and observe that of the various branches of horticulture, fruit-culture undoubtedly occupies as large an area as that of vegetables. That this culture has not yet been pursued with sufficient intensity, which fault will within short be a thing of the past, however, has never proved detrimental to the quality of Dutch fruit. Most satisfactory among the various kinds are apples and pears, cherries and strawberries, plums and grapes, currants and walnuts.

Large orchards are manifold in the district of "de Betuwe" (in the province of Guelderland), in the south of the province of Limburg and in the provinces of Utrecht and Zealand. In Zealand fruit-culture has reached a state of high development in the course of the last 15 years. The well managed trees of orchards exquisitely laid out, yield great quantities of apples here (bellefleurs, reines d'or). Rings smeared with bird-lime and traps are attached to the trees, whilst "Bouilli bordelaise" is regularly sprinkled on them to prevent blight. Instead of rearing a great variety of fruit-trees, growers make a point of some special kinds, which may be supplied in considerable quantities and thus become better marketable. Black currants and gooseberries are generally grown under high trees. The fruit of them is put up to auction and dispatched in hundreds of thousands of kilograms. Tomatoes are culled when they are still unripe.

Moreover, so-called pyramids or bushes that may be removed when all available space is required for the high trees, are sometimes planted below the latter. Sometimes, during the first years after the planting of the trees, agricultural growths are cultivated under them. Later on, the soil is often turned into pasture-land, not only in the province of Zealand, but even to a larger extent in the provinces of Guelderland, Utrecht and Limburg.

View in a nursery of clipped box and yew trees in Aalsmeer.

The "Betuwe" district in Guelderland and the province of Utrecht are largely producive of cherries, next apples, pears and plums. In the south of Limburg apple-culture predominates; the orchards are laid out in pasture-land. Here not nearly so much care is taken of the fruit-trees as is done in Zealand, "de Betuwe" and elsewhere. Improvement in this direction is noticeable, however, largely due to the organized system of auctions. The influence of the Stateteachers of horticulture and horticultural training lead to good results. The district "Westland" in the province of South Holland yields, besides various other kinds of fruit, especially peaches, which are chiefly acquired through forcing in hothouses, as is also done there with grapes, to which fruit this district owes its great reputation. Red currants are also extensively grown here, whereas there is a large culture of strawberries and raspberries in the district of "The Barony of Breda."

A considerable number of factories for jam-making are established in Holland, especially for the working up of small fruits, as red currants, raspberries, strawberries and cherries.

In the year preceding the war (1913) the export of Dutch fruit reached the following approximate numbers: 7 million kilograms of strawberries, 22 million kilograms of apples, 6 million kilograms of pears, 380.000 kilograms of grapes, nearly 4 million kilograms of cherries, upwards of 3 million kilograms of gooseberries, more than 1 million kilograms of black currants, 1 1/3 million kilograms of red and white currants. Thirteen million kilograms of fruit were delivered to England in all and 95 million kilograms to Germany in all, annually.

DUTCH TREE-NURSERIES.— The planting of trees and shrubs also forms a point of special pursuit in our national horticulture, particularly shrubs and fruit-trees. The village of Boskoop stands foremost in this cultivation. More than 8000 people find a living in these cultures, which have extended to other places too and now cover an area of about 2000 acres.

View of a nursery at Boskoop.

They are pursued very intensively and meant for first-class products, which require careful selection of sorts, besides great technical ability. The business acumen of the Boskoop nurserymen leads to a cultivation that can supply almost every country of the earth. The Boskoop traders yearly visit their purchasers personally in America, England, France, Germany, Austria, Hungary, Russia, Sweden, Denmark, Norway and Switzerland to book orders for the coming season, and to remain well-informed about the question of demand and of the fashion, and to buy, if possible, novelties that can further promote production in their own nurseries.

The annual turnover before the war was estimated at 2¼—2½ million gulden, of which not more than about 100.000 gulden was for home consumption. Boskoop produce is conveyed by the truckload over the continent of Europe. For England and America the wares are packed in large cases and carried by steamer to their destination.

Strange to say the trade is of special significance to those countries which have a less favourable climate than ours.

Of the various important kinds the rose is the principal one as regards quantities. Statistics made in 1913 state that the number of plants of this kind amounted to 16.800.000.

The principal nurseries are to be found in the surroundings of Naarden—Bussum, one of the prettiest suburbs of Amsterdam. In this district nursery-men apply themselves especially to the rearing of various fashionable shade- and fruit-trees, which are grown here in extensive nurseries. Here and elsewhere there is an exchange for trees and plants and in all centres of horticulture there is a winter horticultural school of the State, where the training is directed to the special wants of the district. At Boskoop an area of nearly 1750 acres of land is occupied for horticulture in a total of less than 2250 acres. This area is almost entirely covered with nurseries for trees and shrubs.

Other well-known nurseries on soils where the sand has been dug off are met with in the village of Oudenbosch and in Bois-le-Duc, the capital of the province of North-Brabant, also at Zundert, Breda and Roosendaal in the same province. Here a specialty is made of shade and ornamental trees, of which America is certainly to be noted as the largest purchaser. Until 1914 this country, used to send the slips of its national Silver Firs to Holland to sprout here and to be returned to America after they had received excellent and scientific care.

On the fertile soil near the town of Veendam in the province of Groninguen the rearing of fruit-trees, by the side of many other occupations, has developed into a specific culture of the place.

In each of the eleven provinces of the country a number of places may be indicated as centres of arboriculture in Holland. However I confine myself to referring once more to the village of Aalsmeer. This town of gardens, floating as it were on fen-islets in the immediate neighbourhood of Amsterdam, has for many centuries maintained its fame as a specialist in the rearing of a pecular kind of shrubs, which are skilfully trimmed by means of deliberate lopping, artistically fashioned, trained, clipped and cut into the peculiar figures of all kinds of imaginable and fanciful creatures of the world.

THE MOTHERLY CARE OF THE STATE.— It would surpass the limited scope of this book to give a precise chronological summary of all that has been performed by the State in the field of agriculture during the last 25 years. At the end of the 19th century, when agriculture was in a deplorable condition, the Government was willing enough to lend its aid, but simply lacked the means of carrying out its plans. For first of all a staff of experts was required, who were wanting at that time. As a matter of course, the furthering of agricultural training in its various branches was taken up first. When the necessary staff was thus gradually formed, several departments were subsequently constituted with inspectors at the head of them, such as the department of agricultural training, of the veterinary service, of the service of State teachers of agriculture, of the State teachers of horticulture, of the advisers of dairy-keeping and cattle-breeding; next the department of the State experimental stations for agriculture, of the phytopathological service, of the service of domains and State forests and reclamations, of the superintendence of dairy produce, of the information-service as regards crops, of the testing of meat for export.

Also in legislation a good deal has been accomplished in the course of the last twenty years. Several Acts of Parliament were passed, as: the Butter Act, the Act on Horse breeding, the Irrigation Act, the Tithe Act, The Act of the Institution of State management of Forestry, the Plant disease Act, the Act on the Protection of Animals that are useful for agriculture and arboriculture, the Bird Act, the Act on the Testing of Meat for Export, the Act on the State Control of Butter, the Act on the State Control of Cheese, etc.

The Government has constantly paid special attention to agricultural training in its various branches; new experimental stations were established, a Royal Serum Institution was founded, whilst the Recording of Agricultural Statistics was put on a proper footing. Considerable amounts were voted on the State Budget, in order to grant subsidies to companies and associations operating in agriculture. In this way a friendly co-operation between the Government and the corporations has been arrived at, tending to good results.

After the interference of the State had been going on for some time it soon became evident that centralization in such matters was requisite. The care of the State was originally entrusted to various departments of general management, but for the main part assigned to the Home Office, agricultural training and the Governmental Veterinary Superintendence falling under this department; also the Department of "Waterstaat" (for the maintenance of dikes, the navigability of canals, etc.), the Finance Department and the War Office were to some extent charged with the care of agricultural concerns.

This splitting up of activities and dividing of responsibilities among the various departments at last proved most detrimental to an effective furthering of agricultural interests. No wonder that concentration was strongly recommended by agriculturists. In 1905 a special Department of Agriculture, Industries and Commerce was created by Royal Decree, in which the division of

Agriculture was provisionally incorporated in its existing form. At last it was brought to a more independent condition and was charged with the control of agriculture. In its present form it comprises the division of the Ministry of Agriculture, Industries and Commerce, where agricultural affairs are treated on the one hand, and the central management of branches of service not relating to the department, on the other hand.

On the recent State Budgets about four million guilders were voted for the promotion of agricultural interests, a considerable sum, indeed, if only compared with the relatively slight amount intended for this department of governmental care some twenty years ago.

From this concise account of the present cares of the State referring to Dutch agriculture, it appears how comprehensive the task of the State Control of agriculture is at present.

Dutch agriculture is no longer treated by our Government in a step-motherly way, but at present enjoys the continuous concern of the State, not a little to the general weal of the people!

THE PRIMARY TYPE OF DUTCH CATTLE.— If there is one thing for which Holland is and has been known the wide world over, it is her cattle-breeding, and there is nothing in which her cattle finds a better epitome than in the no less celebrated painting by Paulus Potter, the famous "Bull".

Paulus Potter lived in the seventeenth century. He was born at Enkhuizen and was brought up in the very midst of the West-Frisian land of milk and butter. The masterpiece that he left to posterity is, as everybody knows, to be found in the Hague picture-gallery, the Maurits Huis close to "Vijverberg". It stands for one of the finest specimens of Dutch painting. Among Dutch national treasures of art this famous picture may, perhaps be considered as the most national of all, representing as it does a Dutch pasture with a wonderfully painted bull on it.

Could a better advertisement for Dutch cattle-breeding ever have been devised?

Grand, magnificent, imposing. Bearing his head with graceful pride as if the progenitor of an equally proud and strong offspring.

He has not, — but ought he not to have figured as a worthy introduction on the first page of the herd-book of the beautiful Dutch horned cattle?

At Paulus Potter's time, it is true, a genealogy had been kept of the Dutch nobility, but no record was instituted yet for the pedigrees and quarterings of Dutch cattle.

Although this country is largely dependent on the rearing of cattle it is hardly 50 years ago that systematically arranged official herd-books of horned cattle were introduced.

At present there are in our country three herd-books of horned cattle: that of the Netherlands, of the province of Friesland and of the province of North Holland.

The Netherlands Horned Cattle Herd-Book was founded in 1874. The society operates in the whole country, except Friesland, which separated itself in 1878. Until recently its arrangement left a good deal to be desired. No heed was paid to pure breeds and as for registration in the book only the outward appearance, not the character of the society, was reorganised, and the keeping of the herd-book was founded on a sound basis. The rearing of pure breeds is taken to be of paramount importance at present. In view of this idea, cattle have been classified into three categories:

a. the black and white breed of Friesland and Holland
b. the Groninguen breed
c. the red and white breed of the rivers Meuse, Rhine and IJssel.

According to the revised regulations which came into operation on 1st January 1907, the object of the society appears thenceforth to be mainly the encouragement of pure breeding and the improvement of Dutch horned cattle.

It purposes to attain this end by means of the following measures:

a. by instituting, keeping and publishing herd-books for superior horned cattle,

b. by organizing, or assisting in the organization of shows and judging of breeding-cattle,

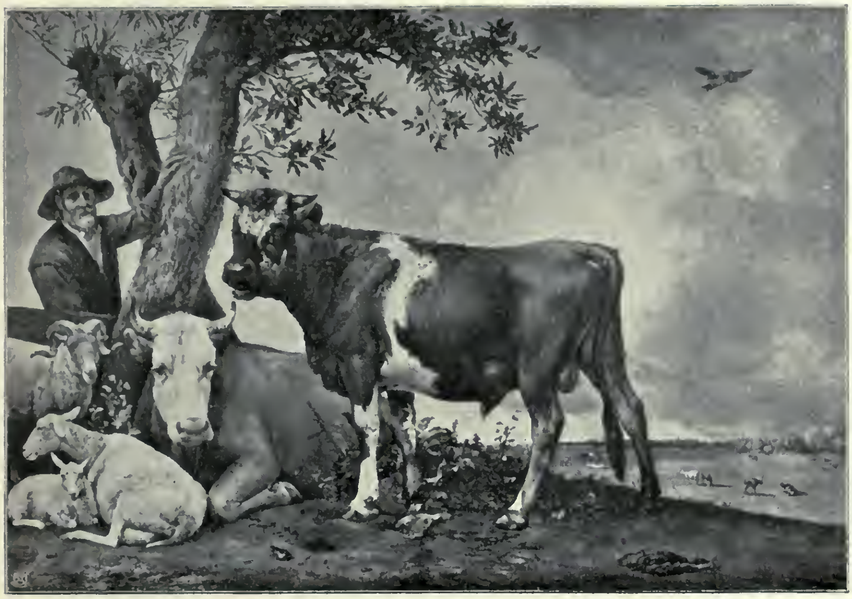
c. by the establishment and supporting of bull-keeping, rearing-associations and supervising-associations,

d. by promoting the sale of Dutch breeding cattle,

e. by advancing all such legitimate measures as may serve to acquire a good and strong stock.

The seat of the society is at the Hague.

The Horned Cattle Herd-Book of the Province of Friesland was founded in 1878 and is established at Leeuwarden. Its object is to institute and to publish in print a register of good strains belonging to the Frisian breed of horned cattle. Both black and white and red and white are comprised in this breed, the latter having by far the smaller number. So we see that the object of this society is more limited than that of the Netherlands Horned Cattle Herd-Book. Nevertheless it has materially furthered the improvement of horned cattle in the province of Friesland, not only as regards appearance, but also as far as productive power is concerned. Thanks to the vigorous activities of the managing board, considerable numbers of pedigree cattle are annually sold to foreign countries in normal times. The principal purchasers are Russia, Sweden, Italy, Spain, America, South Africa. The export was but stopped in the course of the late war. Even in this very country of cattle we have not been spared a meatfamine. But the Government was obliged partly to prohibit killing of cattle, if the stock of cattle was to be prevented from being totally ruined.


"De Stier" (the Bull), picture by Paulus Potter in the Mauritshuis at the Hague.

THREE TYPES OF DUTCH CATTLE.—Dutch cattle, which belongs to the "lowland race" of bovine animals, may be divided into three well-defined varieties:

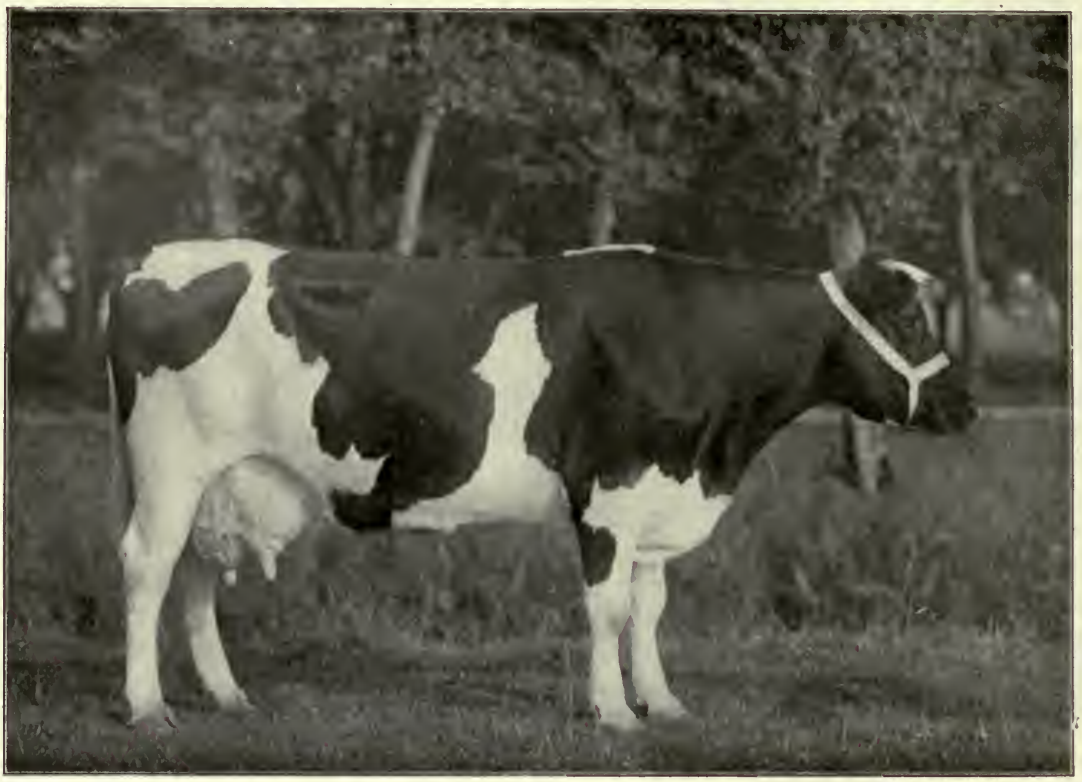
a. the Frisian and Holland breed, of which the prevailing colour is black and white, and which shows the features of the milking breed.

b. the white-headed Groninguen breed; the prevailing colour is black; the features are both of the milk and of the meat kinds,

c. the third breed has its home along the rivers Meuse, Rhine and IJssel; the prevailing colour is red and white; it features the milk and meat kinds.

The original rearing grounds of these breeds are pretty sharply demarcated. The Frisian and

Holland breed is native to Friesland and to North Holland: the former province of West Friesland; the Groninguen breed is native to the province of Groninguen, whilst the native soils of the third type are in the eastern provinces of Overijssel, Guelderland and Limburg. From these original habitations the said breeds have been widely scattered over the whole country and have only partly been preserved by pure breeding. In the great majority of cases, however, they have been interbred. No wonder that in many parts of the country a many-coloured medley of the three breeds has thus been generated, manifesting itself in a great variety of colour and shape peculiar to the Dutch stock of cattle. Only of late years are Dutch breeders beginning to see that this careless way of breeding is altogether wrong and that pure breeding ought to been couraged more.



Type of the Frisian and Holland breed.

In the original rearing districts of the three breeds, where there is constantly a great demand for breeding-cattle prevailing, also for export, pure breeding was resuscitated first and at present there is an increasing tendency for pure breeds throughout the country. Besides, of late years there has been a tendency prevalent to determine what special strain is most suited for breeding in any given part of the country.

As regards colour, too, certain definite differences may be observed.

In Friesland the most desirable variegation is taken to be a black head with a white blaze, clearly outlined black patches on the front, the middel and the back, separated by a broad white band near the shoulders and the haunches. The belly is white and the legs are black above the knees and the heels. The muzzle is partly or wholly slate-coloured (blue), the teats are mostly white, but are not unfrequently blue coloured. The horns are yellowish white or waxen, often ending in black tips, the tail ending in white and with a white tuft. Besides this strain of black and white a relatively small red and white strain is met with in Friesland, which but for the colour of the coat does not differ from the former kind.

In the province of North Holland the so-called "tiger-black and white" strain, a lighter coloured kind of black and white is universally found by the side of the black and white breed proper. In the islands of South Holland, where improvement of cattle has been generally pursued of late years, the black and white colour is in high favour, but the variegation on the skin is not so strongly demarcated as is the case with the Frisian pure strains.

Type of Meuse-Rhine-Yssel cattle.

The characteristic colour of the Groninguen breed is black, though a different colour of the coat is not seldom met with. The trunk is entirely black, the lower part of the chest and the belly being white, the head is white either all over or showing dark borders round the eyes. The legs are black as far down as halfway the fore and hind shanks, the muzzle is mostly blue, the tail being black with a white tuft.

In general the breeders turn their attention to the rearing of beef-producers rather than of milking strains, though of late the raising of milkers has been pursued here more particularly.

The Meuse-, Rhine- and IJssel-breed resembles the Kempen cattle in Belgium and the Niederrheinisch cattle in West Germany and is mainly to be found in the eastern provinces of our country. At present their breeders show a growing belief in pure breeding.

Governmental care in the interest of horned cattle rearing.— It is of only a very recent date that we can speak of the State in Holland showing an interest in horned cattle-breeding. Until then it was generally believed that such support was unnecessary. Even the State Commission appointed in 1877, to suggest all such measures as might lead towards the furthering of cattle-breeding, decided by a great majority of votes, that the cares of the State need not be extended to this sphere of occupation. The Commission expressed as their general opinion that our famous strains of cattle, so highly valuable in themselves, could thrive and be preserved just as well without the support of the State.

The then Government, which had always concerned itself particularly with agricultural affairs, naturally fell in with this conclusion.

However, under the pressure borne upon the Government, a new item was introduced on the State Budget of 1897 to further the interests of horned cattle rearing.

In accordance with the measures already taken previously for the promotion of horse-

Type of Groninguen Cattle.

breeding, the Government laid down General Regulations, which were revised in 1906. These General Regulations prescribe that in each province a commission, appointed by the "committee of deputy-states" of that province, shall be charged with the task, to project a system of rules laying down the course of action to be followed, further to draw up a scheme for the allotment of the moneys entrusted to its care and to submit this scheme to the approbation of the Minister for Agriculture. The provincial commissions also appoint sub-commissions to pass judgment on the awarding of prizes.

During the first few years the State and provincial moneys were almost exclusively intended to serve as subsidies for the retaining of male breeding-cattle of prime quality.

The system of inspecting bulls has shown excellent results in the interest of cattle rearing. If, however, we want to turn the breeding with these male animals to the best account possible, we should be mindful of pairing them with equally first class females.

The Government, which shared this view, gradually raised the State subsidy, at first to the amount of 45.000 gulden; afterwards in 1907, a sum of 70.000 gulden was voted on the State Budget for the purpose. These sums are mainly confided to the provincial commissions and are chiefly used to support bull-keeping and rearing-associations. The Herd-Book Societies, which take an active part in the improvement of cattle, also come in for a considerable share of the subsidies from the Exchequer. Besides the Government the Provincial States, too, grant no small amounts of money on behalf of horned cattle rearing.

FARMS AND LIVE STOCK.— According to the latest official returns on Dutch agriculture (1914) our total live stock of horned cattle amounted to over two million head, comprising 18.183 bulls, 973.098 milking and calving cows, 62.871 cows and oxen reared for manuring purposes, 320.318 steers and heifers, 314.102 calves and 1891 draught oxen. These figures ominously decreased during the war, so that Holland eagerly awaited for peace to resume its former position in this domain.

The distribution of Dutch cattle over the country comes to 84.2 head per 250 acres of plough-and grass-land. However, the various provinces widely differ in this respect. Relatively speaking the greatest number of cattle is found in the provinces of Utrecht and South Holland, being estimated there at about 112 head per 250 acres of cultivated land. Groninguen and Zealand show the smallest numbers, viz. 48.6 and 57.8 head per 250 acres respectively. In

UNIV. OF CALIFORNIA

some parts of the country these averages are still higher than stated above. On the famous pasturelands of the province of Friesland we find 115 head of cattle per 250 acres of cultivated land and even 180 head per 250 acres are found in the neighbourhood of the towns of Delft and Schiedam, the so-called "wash-district".

Owing to the condition of the Dutch climate and of the Dutch soil the cattle of our farms spend about as much time in the pastures as in the cowsheds, and you may be sure that the most excellent care is taken of it both in- and outdoors.

Pasture lands are chiefly to be found on low-lying peat-soils and also on marine clays and fluvial clays. In fact, they occupy an area of something like one third part of the total surface of the country. In some provinces, as North and South Holland, pasturages cover not less than half the surface, in Friesland even two thirds. This considerably changed in the late war, when large tracts of land had to be used for agriculture crops. The climate of Holland, though not particularly severe, brings us night-frost as early as October and the inclement and occasionally wet winter-time not seldom continues till the month of April or even May. During the latter part of summer the weather is often also rainy, but the ditches encircling the pastures, nearly all polders, situated below the level of the Amsterdam watermark (A.P.), — can satisfactorily carry off the rainwater, with the help of windmills or steam pumping mills. However damp our climate may be, this does not at all imply that there would not be plenty of time for our cattle to graze.

The surface of a fairly large farm ranges between 50 and 75 acres. The roof of the farmstead generally covers not only the brick farmhouse, where the farmer lives with his family and his labourers, but also the labour-yard, called "deel" (thrashing-floor), and the elongated cowshed behind it as well, the lofts being employed for the storage of the summer crops of hay. This is meant to be kept there for stall-feeding in winter.

Talking of cowsheds. The Dutch cowshed at present in many places epitomizes all modern appliances and improvements in cattle-housing.

In former times all the cows were placed side by side in a low, musty space, but in modern sheds every cow has a stall of its own. Nothing is omitted to make the cowsheds come up to the strictest principles of human and animal hygiene. A special treatise might be written on the subject, but it could not be included within the compass of the present volume.

Cattle in the meadow.

In the beginning of May the cattle are put to grass. Two thirds of the meadows are ready to be grazed, the rest is destined for hay-fields, to be mown at the end of June or in the beginning of July. Grasslands do not always yield a second crop. Towards the end of November cattle are housed again.

When cows, occasionally already at the age of two, have calved, the young animals get beestings during the first few days, but soon after they are given buttermilk or skimmed milk instead. In the middle of May the calves are allowed to graze in the meadows; besides grass they get as supplementary food so much milk as they require, in addition to meal- and linseedcakes and pulp. In winter the calves receive the same food as the older cattle.

Farm in Friesland.

As already stated above we have seriously suffered from meat-famine. It is due to the effectual measures of the Government, that our rich cattle stock was not doomed to ruin.

THE DAIRY PRODUCE OF HOLLAND.— The keeping of milch cows and the industry in dairy produce form a very important part of specifically Dutch occupations. The simple fact that the total milk production of Holland runs into some 4.000.000.000 kilograms of milk annually, speaks for itself.

Of this quantity, about 750.000.000 kilograms are consumed as fresh milk in all probability, the rest is converted into butter, cheese, condensed milk and dried milk and such like.

Formerly these processes were the occupation of the farmers and their families, at least in so far as butter and cheese making were concerned. But the end of the 19th century was a great change in this respect. Since 1878 dairy work has gradually passed from the hands of the farmers themselves into those of dairy factories.

In some parts of the country the old customs were still adhered to, however, and the dairy work done on the farms. This was the case in the provinces South Holland and Utrecht, where the farmers still make the *famous fullcream Gouda cheese*. The total amount made annually is about 40.000.000 kilograms, which uses some 400.000.000 gks. of milk.

The full cream Gouda cheese is one of the best known in Holland; the cheese are flattened globes in shape, they are made in various weights from three to 15 kilograms and more apiece. This cheese is consumed largely in Holland itself, but lare quantities are also exported. The cheeses are treated and packed in various ways for export. One country likes cheese in soft condition, another wants it hard and firm. For some countries 4, 6 or 8 cheeses are packed in one case, for others each cheese goes into a separate box; for the tropics the cheese is covered with a casing of paraffinewax, or encased in bladders or tins. Thus every market is provided for.

Until a short time ago the full cream cheese was exported by middlemen, who bought it from the farmers. Of late years, many of the farms have formed associations for export, and the associations managed the sales for collective account.

This cheese is the only kind in Holland made of entirely unskimmed milk. In the provinces North Holland and Friesland there are several kinds of cheese made of milk, from which more or less cream has been taken off for butter making.

Farm in the province of Groninguen.

The famed *Edam cheese* 40 + is made from milk which is almost full cream. Abroad, indeed, it is often described as "full cream Edam". These cheeses are quite spherical in shape and weigh about 2 kgs. a piece. They are also a well known article of export of many years standing. Every possible care is taken to make, prepare and pack the Edam cheese to suit all markets, just as in the case of the Gouda cheese. It is usual to colour the outside of the Edam cheeses a bright crimson. This cheese is called "40 +", because it is guaranteed to contain in the dry constituents at least 40 per cent of cream (in really full cream cheese 45 per cent is guaranteed). About 15.000.000 kgrs. of this cheese is made every year, using about 150.000.000 kgrs. of milk.

Besides the above described cheeses, there are also made in Holland every year about 50.000.000 kilograms of what is called "factory" cheese, which takes about 500.000.000 kgrs. of milk. These cheeses are made in the Gouda and Edam shapes, but the degree of cream in them is lower, as the milk has been previously skimmed for butter making. The amount of cream guaranteed in the dry constituents is put down as at least 30 per cent or 20 per cent, the cheese being thus described as:

Gouda 30 +, *Gouda* 20 +, *Edam* 30 + and *Edam* 20 +. Sometimes one hears this factory cheese spoken of as if it were a very inferior product. Nothing is further from the truth, it is an excellent cheese although not so rich in cream. It can for this reason be sold at lower prices than the full cream cheese and forms a valuable addition to the food of people who cannot always afford top prices. The factory cheese is made and packed with every precaution to ensure its reaching its destination in excellent condition.

Thus it is quite apparent, that the amount of cream in the cheese is considered the point of importance by which it is classified. The correct amount of fat (cream) in the cheese is only to be ascertained by chemical analysis, a fact which has led to abuses, cheese being sold as a higher quality than it really was, without detection of the fraud. These practices of course damaged the good name of Dutch cheese and of its makers, and protective measures were adopted by the Dutch Government in conjunction with those interested in the trade, a "cheese control" being instituted and the export of all "uncontrolled" cheese prohibited. As a consequence, all cheese which is now exported bears a mark by which the guaranteed quality as regards fat (cream) is imprinted in the cheese, thus: 45 + (full cream), 40 +, 30 + or 20 +. This mark is simply a guarantee as to fat only, the further qualities and peculiarities of the cheese are to be noted by the private marks of the various exporters and export associations, which have their own value.

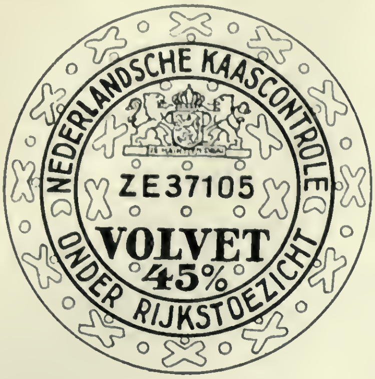
Of no less importance than cheese making is *butter* making in Holland. This is done almost entirely in factories nowadays. As we have seen, a great deal of butter is made in the cheese factories, but there are others making butter exclusively, and again others where condensed milk and dried milk are also made.

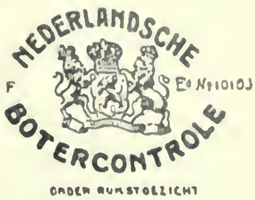
A parade of cattle at the Frisian Agricultural Exhibition in 1912.

Butter is packed in various ways for export, in barrels and cases of different sizes, in tins for the tropics. There is no need to say much about the quality of Dutch butter, it is famous all over the world. Not so very long ago though, it appeared that there was fraud going on it the butter trade, and that butter was being adulterated with water and margarine, also that pure margarine was being sold as "Dutch butter". Here again the Dutch Government co-operated with the butter makers to institute a "butter control" under State supervision, which put an end to all those adulterations twenty years ago. Butter making is now controlled by inspectors of the various "Butter control stations" and all the associated members thus have the right to stamp their butter with the official mark, which is a guarantee that the butter is unadulterated. The total production of Dutch butter is about 70.000.000 kgrs. a year, which uses about 2.600.000.000 kgrs. of milk.

After butter and cheese come *condensed milk and dried milk* as important dairy produce in Holland. Although the output of condensed milk in Holland is much smaller than it is in many other parts of the world (America, for instance, since the war has produced large quantities), the Dutch product enjoys a good reputation in the world's markets on account of its special qualities. Condensed milk is made in the following qualities: full milk with sugar, full milk unsweetened, skimmed milk with sugar. The milk is packed in the well known tins and exported in cases containing 48 tins.

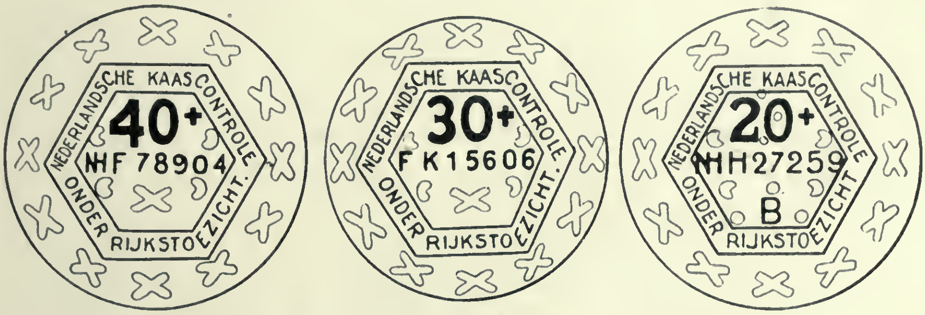
Milk powder is also made from full milk and from skimmed milk and exported in various packings. The cream taken from the milk before conversion into condensed or dried milk is used for butter making.





Buttermark.

Besides the above milk products, it is of interest to note the *sterilisation of milk* and a number of other milk preparations for invalids, etc. under medical prescription. The total quantity of milk converted into one or other of the above products, condensed or otherwise, is 200.000.000 kgrs. Recapitulating therefore, we find the following totals as to dairy produce in Holland:



Cheesemarks.

direct consumption	750.000,000	kgrs. of milk
full cream Gouda cheese	400.000.000	„ „ „
Edam cheese 40 +	150.000.000	„ „ „
factory cheese (Gouda and Edam 30 + and 20 +)	500.000.000	„ „ „
butter	2.600.000.000	„ „ „
condensed milk, dried milk and other products	200,000.000	„ „ „
	4.600.000.000	kgrs. of milk

That this total is higher than the total milk production (4.000.000.000 kgrs.) of Holland is because milk which has been skimmed for butter and then used for cheese or condensing has been counted twice. Moreover, of course this review of figures is merely schematic.

THE ORGANISATION OF THE DUTCH DAIRY PRODUCE INDUSTRY has taken place mainly in two ways. The first Dutch dairy produce factories were started in 1878. They were private concerns. Later on the farmers themselves followed this example and instituted co-operative factories (the first in 1886), where the milk was treated for their collective account. At the present moment there are about 1000 dairy works in Holland, two thirds of them being on a co-operative basis and one third private concerns. The making of condensed milk is for the greater part in the hands of private concerns and so is the provisioning of the larger towns with milk.

The co-operative factories are mostly organised in 7 provincial unions, which form together a federation: the General Dutch Dairy Union. The private factories are nearly all organised in one society: the Association of Dairy factories in Holland.

These organisations defend the interests of their members and promote those of the dairy industry in general and guard against dishonest practices in the trade. The difference between the two societies is, that the one is a co-operative organisation which excludes all private operations and tries to keep every thing in the dairy industry in the hands of the farmers' organisation; while the other believes that by encouraging private initiative in dairy produce and the sale of it, the best interests of the industry are promoted in Holland.

There is also a considerable amount of *press* matter published in the interests of the Dairy industry in Holland. Perhaps the most important of these publications is "The General Dairy Paper", which is very modern in style and contains interesting articles by experts every week, many statistics and reports from markets all over the world. Some of the Societies publish organs of their own, specially devoted to their own concerns. The most important of these is the official organ of the F. N. Z. (the General Dutch Dairy Union).

Though I must be mindful not to give up too much space to the subject, I should not omit to touch in this connection upon the ample care taken by the Government in the interest of national cattle-breeding. I only mention the Utrecht Veterinary College, in which our veterinary surgeons are trained, some 400 of them are now working all over the country, about two thirds being in practice, while the rest are officials. Then the encouragement of cattle-raising and the supervision of the State in horse-breeding, emanating from the Act on horse-breeding; moreover at Bergen-op-Zoom there is an establishment for the rearing of colts. The Government appoints advisers in matters of cattle-rearing and testers of cattle and meat intended for export. It cares for the maintenance of the Royal Serum Institution. I have spoken before of the subsidies granted to associations and unions, but the State also subsidizes the provincial commissions and the Horned Cattle Herd-Books and Stud-Books, not to forget the moneys voted for stall-contests. The Government also takes a lively interest in the breeding of other animals belonging to the rich Dutch live stocks, such as pigs, sheep, goats, and poultry and beeculture too. Then it organizes colleges and lectures for every branch of occupation and issues a considerable number of official publications and statistics. In connection with the important dairy industry we emphasized already the governmental regulations for the supervision of dairying. Moreover the Government founded the Royal Dairy-School at Bolsward (in Friesland), a trial dairy farm at Hoorn (in North Holland) and the Royal Dairy-Station at Leyden (in South Holland). Further at the University for Agriculture at Wageningen, a dairy-faculty has been founded. For the rest the Government is at any time found willing to promote fair business transactions in dairy produce.

To be sure, the Dutch State can hardly be reproached with paying too little attention to the interests of those two pillars of our national subsistence: cattle-breeding and the dairy trade.

An historical outline of Dutch fisheries.— Of a population who from olden times has been known to roam the seas as fishermen and in whose very language have been incorporated so many proverbs remindful of fishing, we can but expect that its rise and prosperity have been intrinsically associated with its national "great fisheries". This denomination was applied especially to the herring fishery, and to this fishery our national fame as a people of fishermen is principally due. Was it not the prince of our poets, the great seventeenth-century bard Joost van den Vondel, — of whom I had occasion to speak in a previous chapter as one of the most brilliant stars of Dutch literature, — who compared the herring to a royal gift bringing us both wealth and food.

As early as two and a half centuries before Vondel's time our reputation as herring-fishers had been created already, owing to an invention of William Beukelszoon van Biervliet, who hit upon a method to efficiently preserve herrings by means of salting them in barrels, so that they became an easily marketable article.

From the same time — about 1400 — Dutch cod-fishing dates back, this fish not only having been used for home consumption, but mainly having been intended for export to neighbouring countries where the Roman Catholic religion interdicted the use of meat on fastdays.

Fishing school at Ymuiden.

A considerable number of patronymics, not only in Amsterdam but in the whole of the country, remind us of the fishing industry, of the ship-owners' business and the sale and the export of fish. Our stately sea-port towns, in the first place Old-Amsterdam, with their characteristic facades point to fishing as a national means of subsistence. Patrician families being descended from herringdealers, are not at all ashamed of their origin. The father of Vondel's contemporary, the famous poetical bailiff of Muiden, Cornelis Pz. Hooft, was a well-known fishmonger, who lived at "Korten Nieuwendijk" at Amsterdam, a street that still exists. At the back his house reached as far as the former "Haringpakkerij" (Herring-packers' Quay), washed by the water of "the IJ", at that time the part of the Zuyder Zee on which Amsterdam was situated. This spot retained its name, reminding of the fish-trade, even until the last century. Historians give us vivid accounts of great rejoicings that used to be made when Dutch herring-fishers returned from their fishing voyages.

Even to-day the advent of the first herrings is a thing of importance. Then the streets are clamorous with the shouts of herring-vendors, who have decorated the barrels containing the coveted herrings with streamers in the national colours.

Most stringent were the measures already adopted in former times by municipal authorities, particularly those of Amsterdam, both for the testing of the good condition of the fish and for the sake of protecting the industry. Every year burgomasters used to administer a new oath to packers and testers on Midsummer evening.

The general decline noticeable in various branches of national trade and industry in the beginning of the 19th century, is said to have been due to the rule of Napoleon. Our considerable herring-trade, however, was already steadily sinking in the course of the 18th century, as a consequence of the many wars carried on at that time and the keenly increasing competition of other nations, which the Dutch tried to surmount by quite inexpedient means. The result was that the reverse was attained of what had been aimed at, so that many of our one time flourishing towns on the Zuyderzee, — still often referred to by foreigners as "les villes mortes", — began to decline. Especially the seaports on the Zuyderzee, such as Hoorn, Enkhuizen, Elburg, used to direct their "buizen" (flat-bottomed fishing-boats) to the North Sea for fishing herrings. Even a number of towns in the provinces of North Holland, Utrecht and Guelderland that were at a considerable distance from the sea, formerly possessed fishing fleets of their own. The townlet of De Rijp for example, which is situated at a pretty long distance from the Zuyderzee coast in North Holland, even at present shows three herrings in its municipal coat of arms. However, those towns on the Zuyderzee that have lost their fame as centres of "great fishery", have partly made up for this by engaging in another, special kind of fishery.

FISHING IN THE NORTH SEA.— Passing on to Holland's present-day fisheries, far most important of all is North Sea fishing.

The revival of our herring fishery has been largely due to the use of more modern types of fishing-boats. The heavy and unwieldy "buizen" and our traditional "bommen" (bluffbowed fishing-boats) have almost everywhere been done away with. Strange to say it is not mechanical power that has played the principal part in the evolution of boat-types. By gradually improving the sailing-vessels themselves, much lighter and consequently many more nets could be employed so that the catch became considerably larger. For sea-fisheries trawls are largely used to-day.

In the first half of the nineteenth century until 1857 the Government made most laudable endeavours to fight the difficulties besetting this occupation. As already stated above, the regulations laid down for the protection of the herring trade proved by no means to the point, and even the most vigorous support of the Government failed to enliven our languishing herring-fishery. If any, it is this particular trade which owes its restoration to the private initiative and the energies of its respective pursuers.

At present our principal herringfishing places: IJmuiden, Maassluis, Vlaardingen, Scheveningen and Katwijk, possess a fishing-fleet entering together in the registers about nine hundred boats, nearly two hundred of which are propelled by steam or motors, the rest being sailing-vessels. Besides, some fishing-boats sail out from Noordwijk. In ordinary circumstances they take averages from 700.000 to 1.000.000 barrels of herrings salted at sea.

The shipowners' trade naturally involves a lot of work for other branches of trade, such as shipbuilding, sailmaking, coopering, net-making, rope-making, in addition to various lines of wholesale and retail trading, all of which are entirely dependent on a more or less plentiful catch of herrings. By the side of North Sea fishery there is our coast fishing, formerly only pursued by smaller coasters. It was especially Volendam and Urk, the two well-known Zuyderzee harbours, that used to send a great many boats to the North Sea coasts; but gradually Volendam gave up this sort of fishing and exclusively took to fishing in its own waters. Urk, on the other hand, still regularly sends out a number of boats from its fleet for coast-fishing on the North Sea, which dispose of their fish chiefly at Ymuiden and Scheveningen. Besides, I mention Wieringen (a Zuyderzee island) Enkhuizen, Texel, Terschelling, Helder, (in North Holland), formerly the chief harbour for the supply of fresh fish, Ouddorp in South Holland, Goeree, Stellendam, Flushing, Arnemuiden and Breskens in Zealand, all of which go in for fishing along the coast and in the Zealand waters, but the latter places mainly pursue shrimp fishery, which however, is not considered to belong to coast trawl fishing proper, as this is more particularly concerned with the catching of fresh sea-fish, such as plaice, dab, sole, turbot etc. At present the chief centre for the supply of fresh sea-fish is Ymuiden, situated on the mouth of the North Sea Canal, which runs from Amsterdam to the North Sea.

Fishing-Harbour at Ymuiden.

This coast village practically took over the entire fish trade of Helder after the North Sea Canal had been constructed. The fishmongers of Helder together with those living at Egmond-at-Sea, transferred their business to Ymuiden, and from that time onwards this important harbour and fish centre has won the reputation of being one of the first fishing-places of Europe. More than one hundred and fifty steam trawlers put to sea from this place, whilst the fish are sold at the State Fish Auctions. In normal times special trains are standing ready to transport the fish far into Germany. It is a curious fact that Dutch fresh sea-fish used to figure as one of the choicest delicacies on the bills of fare of stylish Viennese restaurants. Most excellent and constant cares are being lavished upon the fishing industry at Ymuiden. When the second large fishing harbour is finished which will be within a very short time, Ymuiden bids fair to become the first fishing-harbour and commercial town in the world, next to the English fishing-harbours Grimsby, Aberdeen and Hull. During the last few years before the outbreak of the European war, which, of course, had most pernicious influences on this national trade as well, the value of fresh fish caught by steamtrawlers together with the salt-cod from the Icelandic waters, amounted to nearly seven million gulden.

Coast and Zuyderzee fisheries.— Oyster, mussel and shrimp-fishery is the most important feature of the coast catch. Shrimp-fishing is also followed in the Zuyderzee, but the take along the North Sea board is much more considerable; besides, the shrimp of the North Sea has the larger size. The greatest haul of this fish is effected in the sea-inlets, by which our coast-line is broken in the North and South (compare the first chapter of this book). The inlets in question are the Lauwerszee and the Marsdiep (the first between Friesland and Groninguen, the second between Texel and Helder) in the North of the country, and the Holland and Zealand sea-arms in the South, where the chief centres of the shrimp-fishery are Stellendam, Goeree, Ouddorp, Brouwershaven, Flushing, Middelharnis. Zuyderzee shrimps are brought on shore alive and only then they are boiled and shelled. Shrimps caught along the coast, are boiled on board and when on land part of them are shelled and another part is despatched unshelled. That also this product of the sea constitutes an important article of export is illustrated by the fact that a brawl due to the competition of Dutch shrimp-fishers was once made in the English harbour of Southport.

Another important product from salt waters is mussel. In Zealand mussel-fishing has become a special cultivation. Here the natural mussel-beds are not fished on for consumption any more; areas suitable for the culture of mussels are parcelled out into tracts and farmed out, just like landed property. Such places are sown with so-called "mussel seed" i.e. young mussels from one to a few centimeters in length, and these grow up there into large mussels. They are caught in the so-called "musselseed-beds" in Zealand and sown on the various tracts of musselbeds in that province. As few of these seedbeds however are sufficiently producive of seed for cultivation purposes, large quantities of seed are taken from the "Wadden," near Wieringen in the Zuyderzee, and from the piers along the North Sea coast, and transported to Zealand to become a well-known and not too dear popular delicacy later on.

Oyster culture in Zealand.

The main centres of mussel catching are Philippine, Tholen and Bruinisse. This culture is moreover gradually developing in the "Wadden", such as in the northern part of the Zuyderzee and in the Lauwerszee, the mussels reared there being also of excellent quality. Near the village of Zoutkamp, situated on the northern Lauwerszee a quality of mussels is cultivated which can challenge comparison with Zealand mussels.

The Zealand oyster, on the other hand, is not rivalled in any other part of the country. It is true, very good oysters are also supplied by Wieringen, Texel and Terschelling, but the quantities of these oysters have dwindled down so much in the course of the last century that they practically do not count any longer. Oyster culture has attained a state of high technical development in the province of Zealand.

Shells and tiles are set in places that are most suitable for the purpose, where the spat shed by mother-oysters may find an opportunity to settle and where the young oysters have the best chance to mature into the palatable and fat specimens of their kind. The water of the oyster-pits and in general of all those places where oysterculture is practised, is kept scrupulously clean, in order that the oysters may grow up in accordance with the strictest requirements of hygiene. Also to the product itself thorough technical cares are given after it has been fished up. And thus the formerly languishing industry has seen its way to improve and expand, establishing a reputation for itself all over Europe. The following figures throw sufficient light upon the extent of our oyster export. In 1913 the number of oysters exported was: 16.694.600 to Belgium, 8.900.670 to Germany, 4.539.750 to France and 3.471.810 to England, our home consumption not exceeding the number of 1.195.055 specimens; the total output amounted to more than 35 millions.

Special mention must be made of the Zuyderzee grounds, were it only for the profuse catch of smelt, yielding enormous quantities both for home consumption and for export. In fact, the village of Volendam in the province of North Holland and the two typical isles of Marken and Urk, all centres of Zuyderzee fishing, are well known to foreigners generally.

In former times our fisheries were closely connected with our navigation, another important branch of trade which I have left for discussion in one of the following chapters.

Smelt fishing in the frozen Zuydersea.

CHAPTER VI – DUTCH FINANCE AND FINANCIAL INSTITUTIONS

A brief historical survey of the money market in Holland. – Historical development of Dutch State Finance. — Dutch coinage. — Various establishments for credit and investment. — The Netherlands Bank. — "N. O. T." Our money market during the present depression. — Taxes and contributions in wartime. — The future of Dutch finance.

A BRIEF HISTORICAL SURVEY OF THE MONEY MARKET IN HOLLAND.— Tracing back the history of finance in Holland we see that already at an early date the Netherlands took the lead among the principal money markets in the world. Again, it was the favourable situation of our country, between various European countries both on the East and West and on the North and South, which rendered Holland most appropriate to act as an intermediary. Not only did our own commerce, shipping and industries considerably profit by this favourable geographical position, but also international banking business owes its well-founded basis to it, whilst our national prosperity laid the firm foundations of the constantly increasing national wealth.

The high level of political and religious freedom that has always characterized our country, — I had already occasion to allude to this in some previous chapters, — was another important factor to make of the Netherlands a "pied-à-terre" for leading merchants, statesmen, shipowners and manufacturers from all corners of the earth, so that the former Republic came to be a country of great wealth, also on account of its money business.

In preceding pages I have tried to point out to you that the different stages in the history of the country are closely connected with the general prosperity and enterprise of the Dutch nation, resulting in the foundation of several large enterprises that, in their turn, gave origin to the principles of co-operation in commerce, as embodied for instance in the former East India and West India Companies. Huge profits were yielded by such enterprises. The dividend paid to shareholders of the first mentioned company trading to our colonies, for the period 1605—1797 amounted to no less than 3689 per cent, which means an average annual dividend of 19.2 per cent, and this notwithstanding there was a gap of some 20 years during which no dividend was paid at all. In the year 1720 characterized by enormous speculations, the shares were even quoted at 1080 % and in 1780 they still maintained a height of 327 % Later on, however, the fortunes of this important enterprise began to decline steadily.

For all that, it was not only the East India Company, but there were also a good many other undertakings that helped to materially strengthen Dutch credit. As one of the German Emperors put it: "Europe could not subsist but for Dutch money." Dutch bankers have never shrunk from extending their sphere of operations far and wide beyond the boundaries of their country, especially not in the 18th century, when our own trade was slackening, whereas commerce in foreign countries was becoming brisker, so that in such countries fresh capital was required from elsewhere.

In those times Amsterdam was really *the* money market in the world. Thanks to the foundation at the beginning of the seventeenth century of the Amsterdam Exchange, not to forget the "Amsterdamsche Wisselbank" (Amsterdam Exchange-Office), Holland, being the only country with a stable value of its monetary unit, became the centre for the settling of accounts in Europe. The standard coin itself was afterwards withdrawn from circulation and only the value of it was still observed as basis for calculation, just like the guinea in England and "schelling" (sixpence) and "daalder" (half a crown) in Holland, which coins are no longer extant.

Then the Amsterdam Exchange, dating from 1609, was also the mart where almost every foreign state or sovereign in Europe used to contract their loans. Thus several large foreign bankers settled at Amsterdam in the eighteenth century. This explains how there are a number of well-known Amsterdam bankers bearing names of foreign origin, such as: Hope, of a family native to England, Labouchère, of French origin, and Sillem, Lippmann, Rosenthal, Wertheim and others, taking their origin from Germany. The latter three in the 19th century. By the side of these a good many families of purely Dutch descent have maintained a leading position in the national money trade, either dealing on the stock exchanges of Amsterdam and Rotterdam or elsewhere in the country.

HISTORICAL DEVELOPMENT OF DUTCH STATE FINANCE.— Let us now pass in brief review the history and the nature of Dutch State Finance. To this end we have to go back to the history of the Netherlands State constitution — as already dealt with in the second chapter of the present book — with which Dutch State Finance is closely interwoven.

The constitution of the State during the Batavian Republic, although founded on sound principles, did not prove a success in practice, which is clear from the rapid succession of the different modes of constitution. Moreover, the constitution of 1798 was little in keeping with the popular spirit and opinion; it had been given us from without and was distinguished by its peculiar French character. The fact that the expenditure of the State was abnormally increased as the country was constantly kept on a warfooting at that time, was another reason why it was impossible to carry out even the best founded system of financial management.

When in 1814 the constraint imposed by the French rule was lifted from the Dutch nation; the institutions and principles from before 1795 were to some extent adopted again. Also in matters of finance much was taken over from the old system. A financial law dating from 14th May 1814, afterwards proved a failure and even became a source of difficulties in financial concerns of the State. In the subsequent period of peace — from 1819 till 1829 — the said mistakes led to a terrible increase of the national debt and of the interest accruing to it. The hurtful effects doubly manifested themselves in the following period of war.

That in 1815 bonds bearing interest were issued under guarantee of the taxes of the following year, was excusable in a time when the shortage of ready money was not ascribable to mismanagement; but that in 1829, immediately after the outbreak of the disturbances in Belgium, a similar policy had to be adopted was really a consequence of a wrong financial management. Only after 1839 minister Van Hall knew how to introduce regulations by which the State Finance was based on more proper foundations.

The idea of national debt, an important item in matters of State Finance, dates from 1798; before that time only provincial debts were known in this country, apart from the less important "Generaliteit" debt, in the time of the Republic of the United Netherlands. Special means had to be provided when extraordinary circumstances gave rise to a want of money, as was still the case in times lying behind us for some 70 years past. In 1846 a new phase of well-proportioned political life set in in Holland. Then the country was at peace with foreign powers; leaving aside the wars carried on in Achin on Sumatra and several expeditions sent out there, which are to be considered rather as domestic affairs of the country. So the years between 1798 and 1845 seemed to form a period of investigation as to a proper management of the State Finance.

I shall not expatiate upon the history of Dutch finance in the last century and consider it of greater importance to bring into prominence the state of things at the present day, for let us not forget that at the outbreak of the European war, which dealt hardly less severe blows to Holland than to the countries actually engaged in it, the national treasury was found to be in a normal state. However, the critical conditions ensuing from the war exacted heavy sacrifices on the part of the Exchequer.

I think it best to give here a short outline of governmental regulations in matters of finance for the purpose of providing means to meet the unforeseen expenses in connection with the mobilization and other extraordinary circumstances.

But first of all let me give some notes on our monetary system and on a few institutions for the giving of credit.

DUTCH COINAGE.— The Dutch monetary laws were codified without any modifications in May 1901, for the successive Acts of Parliament had made a sort of patchwork out of them. As the then Minister of Finance, the late N. G. Pierson, L. L. D., wrote in the preamble to the respective bill, the act had a twofold object in view, viz. to stop the use of foreign coins for inland circulation, particularly in a few border-districts, and secondly the codification of rules on Dutch coinage, which were previously laid down in five different Acts of Parliament.

The system of our coins is based on the laws of 1847, which were enlarged and revised with respect to the gold standard in 1875, whilst an Act of Parliament of 1884 makes provision for keeping "Rijksdaalders" (4 sh. 2 d) and "Guldens" (1 sh. 8 d.) at gold-value. According to the main regulations of the law the guilder or gulden is accepted as the unit of calculation in the Dutch monetary system and divided into one hundred cents, while all the particulars relating to the other Dutch coins are included in it. We have to discriminate between those coins that are legal tender to any unlimited amount and those not being legal tender above a certain number.

Considered as legal tender to any amount are: in gold, the ten-guilder coin; in silver, the "Rijksdaalder" or coin of two guldens and a half, further the guilder and the half-guilder. The following coins, used as change, are legal tender to a limited number: in silver, the 25-cent bit, the 10-cent bit; in nickel, the "stuiver" or five-cent piece; in bronze, the 2½-cent piece, the cent and the half-cent. The maximum amounts of change that may not be refused in payment are for change in silver coins, ten gulden; for change in nickel, one gulden, and for change in bronze 25 cents. Small money may be exchanged for "Rijksdaalders", guilders and half-guilders in amounts of at least fifty gulden in silver change, or ten gulden in nickel or bronze change.

Free coining is only allowed for ten-gulden gold coins, with a mintage of five gulden at most per kilogram of metal, the free coinage of other coins not being permitted at all. As the law has it: "Rijksdaalders, guilders, and half-guilders may only be coined for account of the State, in substitution for silver coins that are or have been withdrawn form circulation by Government; small money is only coined for account of the State; for the coining of silver small money only State coins may be used".

A radical change was made by the Act of Parliament of 31 October 1912 (No. 324 in the Official Gazette), to the effect that both in Holland and in the Dutch Indies the free coinage of silver pieces was permitted again, with the restriction, however, that this may only be done by order and for account of the State.

The State Mint, established at Utrecht, is a large, modern building, where the comprehensive work is done in accordance with the most modern methods of coining and die-sinking.

From the above coinage law it is clear that Holland is a "gold standard" country, although properly speaking it ought to be called a "limping standard" country, as by the side of the gold ten-guilder coin there are also some silver coins recognized by law as legal tender to any amount. But there is this very wide difference that anybody may freely have ten-guilder pieces coined, whereas silver coins may only be coined for account of the State and this even within certain limits. So we see that the Dutch law recognizes only one coin as standard money proper, viz. the gold ten-guilder coin, all other coins, both the larger silver ones and small money, being token money only.

In the period of 1840—1915 the Dutch State Mint has struck for inland circulation:

137.991.000	gulden	in	gold	coins
346.318.000	,,	,,	,,	"Rijksdaalders"
159.302.000	,,	,,	,,	guilder-coins
42.413.000	,,	,,	,,	half-guilder-coins
29.117.000	,,	,,	,,	small money.

It was estimated that in 1916 there was an amount of 178.113.790 gulden of specie in Holland, 70.447.790 gulden being gold coins, nearly the whole of which was deposited at the Netherlands Bank, and 103.637.000 gulden having the form of large silver coins.

Royal Post-Office Savings-Bank at Amsterdam.

VARIOUS ESTABLISHMENTS FOR CREDIT AND INVESTMENT.— It need hardly be said that under the varied systems of giving credit a progressing and most substantial support is being lent to our commerce and industries, our navigation and fisheries, and undertakings set afoot in our colonies, in short to all sources of our national subsistence and welfare, by institutions for the giving of credit, by banks as well as by the Exchanges in our large commercial cities, —especially that of Amsterdam, where also the principal [seat of the Netherlands Bank is established —; further by insurance companies, warehouse companies, Chambers of Commerce, etc.

It was especially our large banking establishments, as well as the Royal Post-Office Savings-Bank and private savings-banks, that at the outbreak of the war found themselves under the necessity of appealing to banks of circulation for the discounting of bills of exchange and the contracting of loans. This is easy to understand if we only consider that at once all investments, even those that were readily realizable, could not be converted into money, with the exception of the bills of exchange and the securities that could be discounted or deposited as pledges for loans with the Netherlands Bank. The Royal Post-Office Savings-Bank, for instance, had always put out large sums of money in continuation-loans at the Exchange which sometimes exceeded an amount of 20 million gulden. The large banking establishments, too, used to place out a considerable part of their free moneys in continuation-loans. In the beginning of August 1914, in a time when the rush on the banks made it necessary for them to have enormous amounts of cash at their command, the Stock Exchange was closed, so that the above sums of money were not realizable for the time being.

The reports of our large banks for the year 1914 all tell us to what an extent money was recalled as soon as the war broke out. During the first four days of August 1914 balances of current and deposit accounts at the "Amsterdamsche Bank" (Amsterdam Bank) were claimed in cash to an amount of over 20 million gulden, whilst only 8 million gulden were then deposited, from which we see at any rate that the general public was soon restored to tranquillity again. The "Incasso-Bank" records that an amount of 6.400.000 gulden had to be repaid and the "Rotterdamsche Bankvereeniging" (Rotterdam Banking Company) speaks of an amount of nearly 24 million gulden returned.

No wonder therefore that most of these banks loudly protested against the closing of the Exchange. If the Exchange had remained open, however, they would undoubtedly have recalled continuation loans on a prodigious scale.

The Amsterdam Stock Exchange closed of its own accord, though. A few months after, an Exchange-act was passed, which restricted the absolute freedom of the Stock Exchange without, however, going the length of instituting a moratorium.

It is largely owing to the material support of the Netherlands Bank that the various Dutch banking establishments have been able to weather the storm of the first few war-days. Indeed, the alarmed public was so perfectly reassured, that at the end of the first year of the war (1914) the sum of deposits with most banks was even higher than it was in December of the year before.

Stock-Exchange at Amsterdam.

Since the outbreak of the war the systems of keeping current accounts and of clearing have completely changed the ruling methods of settling accounts in Holland, especially the clearing system introduced at the Netherlands Bank. This had always been of very little importance before the war, because the Netherlands Bank, which — just like foreign Banks of Circulation, — does not pay any interest on balances of accounts to its own debit, used to charge a certain commission for money deposited with it. This commission was abolished after the European war broke out. Those who have an account with a banking-house can now pay or receive through the Netherlands Bank. Thus the great demand for cash has been restricted, while the settling of accounts by means of the clearing system is more brought to the fore at present.

Moreover, the Government itself, as well as the town of Amsterdam, are gradually adopting the clearing system, the former on behalf of the State post-offices, the latter in a special service and it seems that this way of settling accounts will come into general favour in the long run. For the present moment however, the clearing system is not so extensively in vogue here as is the case in some foreign countries.

On the other hand, in the Dutch Indies, notably in the island of Java, the clearing system has been generally adopted for quite a number of years. This way of proceeding was introduced there by the "Javasche Bank" (Java Bank), a body that in the East Indies fulfils the same duty as the Netherlands Bank in Holland.

After the success of the gold-exchange standard in our own colonies and after this system had been introduced into British India as well as in the Philippines, the present chairman of the Netherlands Bank, M. G. Vissering, L. L. D., at one time chairman of the Java Bank and adviser to the Chinese Government, suggested to the latter to adopt the system of the gold-exchange standard with respect to China's relations to foreign countries, — the silver standard still being in force in that country, — and to retain the silver standard and partly even the copper standard for inland circulation. Thus a state of transition has been created in that large empire. Similarly all these standards had for many years been in use side by side in our own colonies and in this way many financial puzzles have found a natural solution in the Dutch East Indies.

THE NETHERLANDS BANK.— The mere mention of the talented, present chairman's name leads me to a discussion of that important institution, the Netherlands Bank, which is established at Amsterdam.

One of the principal rights conferred on this considerable financial body is its authorization to control the inland circulation of coins, with a view to preventing gold pieces from being sent abroad out of the inland circulation. To this end the delivery of gold ten-guilder pieces by the Bank on behalf of inland circulation is limited to a minimum.

When the gold-exchange standard came into force, the managing board of the Bank did not fail to see what was to be the result of the pecuniary policy adopted. It also undertook from the outset to lend a vigorous support to the State that, in spite of the difficulties arising from the actual monetary state, the gold standard might be rigorously retained and any rise of the rate exchange on foreign countries above the rate at which accounts can as well be settled in gold, might be prevented.

The Netherlands Bank did everything in its power to bring silver coins into circulation and to retain gold ten-guilder pieces. This was not done from a fear that gold coins should take the place of silver coins in circulation and silver should come back to the Bank in too large quantities, but there was another possible danger against which precautions had to be taken. If the Bank gives out gold without it being necessary to do so, this gold may be used for export; this is naturally not the case with silver token money. And especially in recent years, before the war, when some foreign countries, as for instance Germany, have paid a bounty for the sending of gold, people might have been encouraged to dispatch the same beyond the boundaries even when the settling of one's accounts was cheaper by means of bills of exchange than by sending gold. In this way the amount of gold in Holland would decrease exclusively in the interests of foreign countries and of third parties who would make a nice little sum out of the transactions. No wonder therefore that the Netherlands Bank has only brought silver into circulation, and has only then delivered gold for export when it deemed that the proper moment had come to do so, and when it had also ascertained that the gold was really employed for the purpose.

So we see that the Netherlands Bank in fulfilment of its engagements towards the state, rendered our Government the aid that in the given circumstances was requisite for the latter to make the monetary system answer its purpose well. At the same time the uncoining of silver pieces was prevented through it.

The financial management by which the Netherlands Bank helps to promote a proper circulation of coins, belongs to the principal concerns of the Bank, however, it has never lost sight of its other departments for all that. It is of great interest to foreign countries to know that the above Act of Parliament of 1884 stipulates, that if there is too much silver for circulation, so that it might go down under gold-value, the Government is entitled to melt "Rijksdaalders" to an amount of 25 million gulden and to sell the silver, the loss being borne by the Exchequer. Provision has also been made that silver coins are kept at gold-value.

The amount of gold with the Netherlands Bank has largely been on the increase, whereas that of silver has considerably decreased. As for the latter, the quantities in circulation within the country have pretty well remained the same and the decrease of the amount of silver almost entirely comes to the benefit of the Netherlands Bank; the same holds good with respect to the increase of the quantities of gold.

"N. O. T." — It would not do to omit a typical war-institution, originated on the initiative of a "Commissie voor den Nederlandschen handel" (Committee for Dutch Commerce), which shortly after the breaking out of the war was founded at the Hague, with a view to giving advice to businessmen. Members of the Committee were Jonkheer Op ten Noort, chairman of the board of directors of the Steamship Navigation Company "Nederland" (the Netherlands), Mr. G. Kröller, among the foremost Rotterdam merchants, Mr. C. J. K. van Aalst, chairman of the "Nederlandsche Handelmaatschappij" at Amsterdam, Mr. J. van Vollenhoven, one of the managing directors of the Netherlands Bank, and the Leyden Professor C. van Vollenhoven, L.L.D. After some time a suggestion was made from within the Committee to act as a managing rather than an advisory body; finally, however, it assumed an authoritative character.

Originally the activities of the N. O. T. were kept within the pales of the goods-trade, but in consequence of the belligerents' economical measures getting ever more pinching, the Committee found itself obliged to intervene in banking transactions too. Arbitrage of stocks and traffic in coupons and bills of exchange were constantly in jeopardy, through England seizing our mail and keeping back any valuable documents that roused a suspicion of serving foreign interests. Long negotiations held for the settlement of various questions led to the foundation of a financial department of the N. O. T., rendering assistance in the dispatch of valuable documents after having ascertained that they were of bona fide Dutch origin.

The measures of the N. O. T. strongly affected the organization of Dutch banking business. Another important body resulting from the critical conditions is the Nederlandsche Uitvoer Maatschappij (Netherlands Export Society) indicated by its initials N. U. M., which was founded with the co-operation of the Government. These were, however, exclusively war time institutions.

OUR MONEY-MARKET DURING THE PRESENT DEPRESSION.— The European war has not exercised such a great influence on the organization of the Dutch money-market as was expected at first. With respect to this, I refer to an important essay by D. Keesing, a Dutch writer on financial and economical subjects, about the pressure exerted by the war on monetary and banking business, in which essay the writer observes, that during the first commotion in the beginning of the war it was proved by circumstances that the large Dutch money-lenders were wrong in placing out their free capitals in continuation loans on such a prodigious scale, instead of floating part of their money in bills of exchange, as has been done in foreign countries. The prevalent conviction that the best plan for easily realizable and safe

Offices of a large Bank at Amsterdam.

investments of money to be recalled in a short time, should be to put it out in continuation loans, sorely proved to be untenable when the Stock Exchange had been closed and the "Exchange blockade" was instituted. The quick rally on the Exchange and the speedy redemption of a great number of "blockaded" items, consequent on it, has brought a happy change in the existing state of things, so that the said investments eventually suffered hardly any losses.

The prediction, that henceforth money would be invested in continuation loans to a much smaller extent has not come true. However, the distinction between more or less safe securities for these loans is observed more strictly than hitherto. Besides, modifications have been made in the terms for the contracting of continuation loans with respect to the surplus of the pledge, calculation of interest and repayment.

With our neighbour Germany, a good many transactions had been entered into for the settlement of debts, i. e. arising from sales of our agricultural products, so that the German buyers had been enabled to postpone payment to a later time. A similar agreement was made with England, namely for the monthly taking over of about an equally large amount in the form of written orders on the German Exchequer.

Owing to all such agreements it has been possible somewhat to check the constant influx of gold into this country, which would otherwise have kept increasing to a formidable extent.

Also for our banking establishments in the Dutch Indies many difficulties arose from the unfavourable rates of exchange as regards the remittance of money, especially in the beginning of the European war. But also these institutions have eventually shown themselves capable of most prosperous development, partly in consequence of the brilliant results of not a few Indian plantations and chiefly of the sugar industry in Java.

When thus taking into consideration the various pecuniary and economical difficulties resulting from the war and the consequent critical conditions, we may arrive at the conclusion, that in spite of the war at first threatening the Dutch banking business with great and imminent dangers, our neutrality, strictly carried through on all sides, has enabled both our commerce and industries and our agriculture and cattle rearing, as well as our navigation and fisheries, to expand considerably at home and abroad and has notably helped to promote the development of our banking business. The continuance of the war, however, made itself felt more and more severely in all these branches of national welfare.

TAXES AND CONTRIBUTIONS IN WARTIME.— The critical state of the last few years has made strong appeals on the National Treasury. The mobilization of the Dutch military and naval forces strictly maintained from the end of July 1914, exacted an amount of half a million guilders daily. This means an outlay as never yet demanded for our national defence. The Dutch nation has already paid up a considerable part of these sums and what is further required will certainly be paid regularly by the Dutch. Among the whole of our people a strong conviction prevailed that even the heaviest financial sacrifices were preferable to a fatal war, which though forced upon us would have been inevitable if our neutrality had been trespassed upon by any of the belligerent nations. No wonder that the financial policy of the Government met with general approval all over the country.

The raising of the money required for mobilization and several other purposes, directly or indirectly connected with the war and the present critical conditions, could on the whole be effected in two ways, viz. by means of loans and by levying taxes. Either of these systems has its advantages and disadvantages, but we had better not dwell upon them here.

At the outbreak of the war, when it was realized that the extraordinary expenses had to be defrayed by special means, the question was argued what would be the best plan for Holland to procure the necessary moneys. At the end of 1914 the then Minister of Finance, Professor M. W. F. Treub, deemed it most advisable to issue a loan of 275 million gulden, an exceptionally high amount for our country. The interest was fixed at 5 %. But at the beginning of 1916, when the floating debt had risen so high that it had to be converted into funded debt, the then Minister of Finance Mr. Van Gijn, L.L.D., did not shrink from introducing a bill for the contracting of a new loan of 125 million guilders, in addition to the levying of three "Defence-Taxes," viz. two contributions levied on private capitals and one on private incomes.

Another extraordinary tax, proposed on 14th March 1916, has been levied on war-profits.

The fact that a moratorium was not officially proclaimed in Holland speaks a good deal in favour of the Dutch money-market and was a success for Dutch bankers, who joined hands to prevent a moratorium by all possible means. The "Vereeniging voor den Geldhandel" (Association for Money-business), founded with that object shortly after the war broke out, has undoubtedly done excellent work in so far as it has assisted private people and corporations that would else have been compelled to appeal to a moratorium.

THE FUTURE OF DUTCH FINANCE.— In the recent abnormal times our National Debt has naturally increased to an enormous extent. Whereas in 1909 the total amount did not exceed 1128 million guilders, on which 36.340.000 guilders had to be paid for interest and redemption, the year 1918 showed figures of 1609 million guilders, the items for interest and redemption proportionally increasing to 45.970.000 guilders.

The sum total of private capital subject to property-tax amounted to 7841 million guilders in 1918, against 6501 million guilders a decade earlier, and aggregated a number of about one hundred thousand persons assessed, and this in spite of the modifications made in the property-tax in 1915. This number comprises 285 cases of capitals from 1 to 1½ million guilders, 92 cases of capitals from 1½ to 2 million guilders, 141 cases of capitals of 2 million guilders or more. We are not far off in estimating the national wealth at something like sixteen milliard guilders.

In the preceding chapters as well as in those on our Colonies, Navigation and Industries, the interested reader may find an answer to the question how these fortunes have been made and in what way they have been invested.

Many a promising field of activity may still be opened up for Dutch enterprise and Dutch capital, not least for our banking establishments that have already found a wide and lucrative sphere of action, the scope of which ever allows of expansion.

The system of giving advances previous to the reimbursement on goods imported with a foreign destination, is a branch of money-business that, as a result of the late war, has also been largely developed in Holland. Even after the war this line of business is sure to be partly retained by our banks, owing to the peculiar and favourable position held by our country as a State that has remained neutral among the formerly belligerent nations; for business transactions between the lately hostile parties are likely to remain embarrassed for some length of time, because of measures taken by the governments, as well as through the inveterate enmity between the various peoples. Consequently, those nations which have maintained their neutrality, will take up a serviceable and profitable place as intermediaries for giving credit on imported and exported goods and rendering other useful assistance of the same nature.

Of late years such credit has been accorded in Holland to a much larger extent than had been done before. Besides, foreign countries have entrusted considerable amounts of money to the Dutch money-market, because these amounts were considered safest here or because a balance of money in Holland was desired for the payment of orders on goods.

Thanks to these various factors our money-market has certainly become of enhanced importance. Furthermore, during the great European war the foundation has been laid for expansion of our oversea trade in various directions. I only mention the establishment of new Dutch banking institutions in South America and the establishment of a company for promoting the trade to South American States. Also the position of our shipping companies has been materially strengthened, of which I shall have occasion to speak later on. The closer concentration in banking business, so much called for in wartime, will no doubt prove very beneficial to this general development. A change for the better may already be noticed as far as deposits are concerned.

Moreover, the ample supply of ready money gradually ensuing from warprofits, the impossibility of obtaining new stores of many required goods, the realization of foreign stocks, in addition to a good many other factors, have led to a general extension of this latter mode of investment. The place held by our banks in economic life has undoubtedly become of greater significance in consequence.

It is mainly due to the enlargement of Dutch capital that Dutch banking establishments will also in the future be enabled to play a part of importance in international trading.

CHAPTER VII — THE EAST AND WEST INDIAN COLONIES

The Netherlands and the East Indian Archipelago.—"Like a girdle of emeralds".—The various races of aborigines.—How the population lives in the tropics—Tropical vegetation.—Agriculture and Public Works.—Characteristics of our Colonial Government.—The East Indian Defences.—The general economic prosperity of the population and the future of the East Indies.—Import and export trade of the natives.—The most important of European cultures.—How the East Indies are connected with the world.—A few notes on the Dutch West Indies.

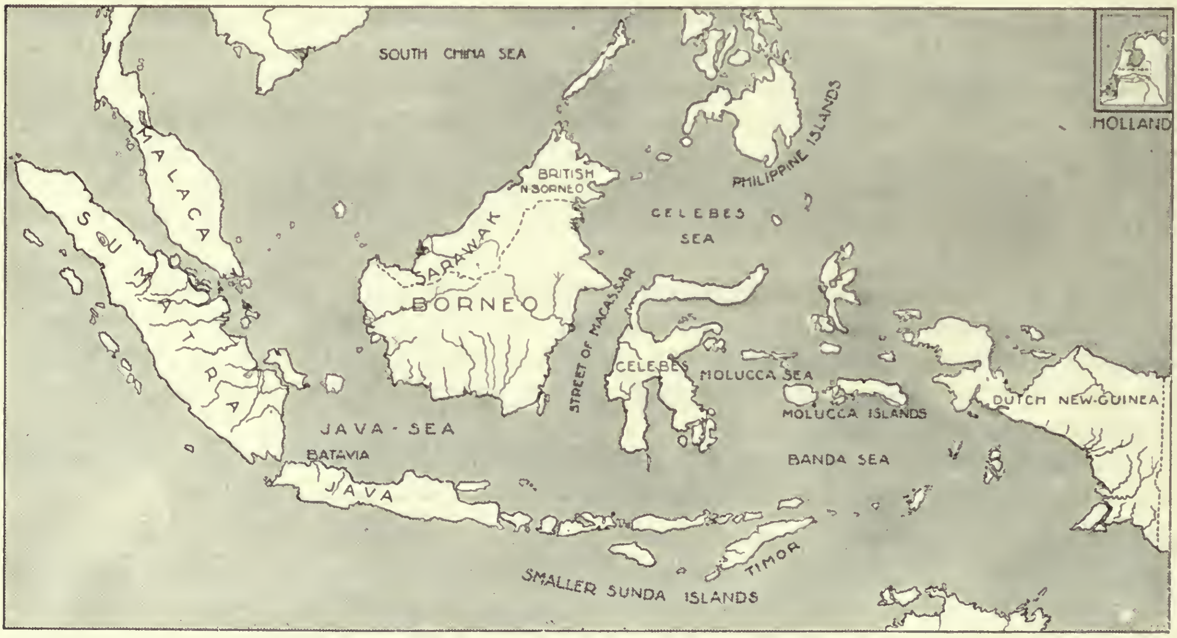
The Netherlands and the East Indian Archipelago.— In the year 1916 it was exactly a hundred years since the Dutch East Indian Colonies in the continent of Asia actually became part of the Kingdom of the Netherlands.

During the past century the mother country with its six million inhabitants has been constantly faced with fresh and onerous duties, owing to the rapid development of its colonial empire, with a population of more than 37 million inhabitants. The significance of India's immense riches constantly gained in importance, but the social unrest of the present times has caused much anxiety and required great and constant care in various parts of the empire. And although feelings of envy and even of suspicion with regard to our colonial system are aroused in foreign countries, the Netherlands have always proved how inseverable are the ties which bind the home country to the Colonies and how unfailing is the devotion of the Government and the interest of the entire nation on their behalf.

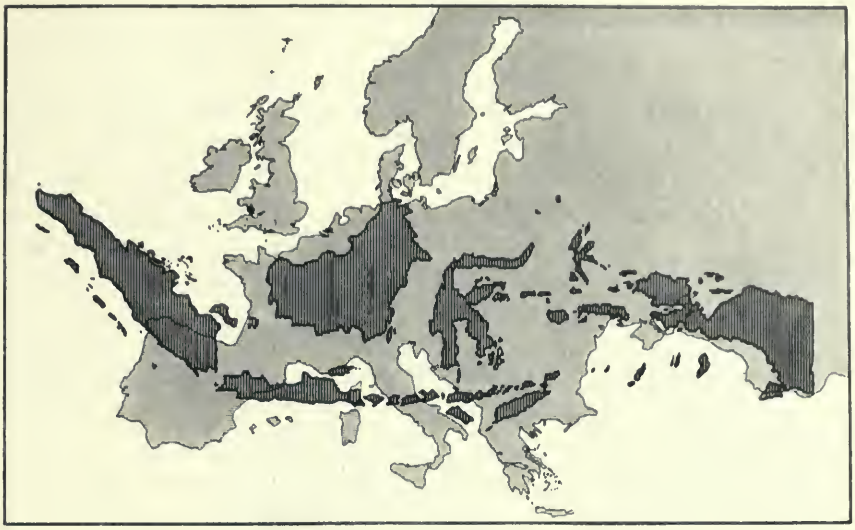
For a whole century we have succeeded in preserving our East Indian possessions almost intact and have slowly (too slowly according to some) developed their resources with but small numbers of men.

It is fortunate however that, when it is necessary, this country is able and willing to make any personal and pecuniary sacrifices which may be required.

The so-called European plantations or cultures and the various industries have opened


SOUTH CHINA SEA
HOLLAND
BRITISH N.BORNEO
PHILIPPINE ISLANDS
CELEBES SEA
MALACA
SUMATRA
SARAWAK
BORNEO
STREET OF MACASSAR
CELEBES
MOLUCCA SEA
MOLUCCA ISLANDS
DUTCH NEW-GUINEA
JAVA - SEA
BATAVIA
JAVA
BANDA SEA
TIMOR
SMALLER SUNDA ISLANDS

Map of the East Indian Archipelago.



The area of the Dutch East Indies compared with that of Europe.

up sources of economic welfare which appear unlimited, thanks to a general revival of commercial energy and enterprise, supported by the benevolent protection of the Netherlands. In this chapter, which will be devoted to a description of our Indian Colonies as they are at the present day, an attempt will be made to give a concise but clear sketch of the plantations and industries and of the significance of this precious colonial possession for the Netherlands.

"LIKE A GIRDLE OF EMERALDS SLUNG ABOUT THE EQUATOR" is the poetic metaphor for the East Indian Archipelago employed by the Dutch author known under the name of Multatuli, and it is certainly a good description of the delicate beauty of this Asiatic empire of islands.

The East Indian Archipelago, from east to west, extends for a distance of one ninth of the circumference of our globe, measured along the Equator. It is the largest group of islands in the world and has a population of about 40 million inhabitants, so that of all the other archipelagos of this planet, only the British Isles with their 45 million inhabitants and the Japanese group with 52 million can boast of a greater population.

Nowhere else on the face of the earth shall we find a territory of the same area which can produce such valuable crops in such great variety. The same fertility and variety are seen in the nature of the soil, the climate and flora; the diversity of its races and even of its history and political government is most striking.

The largest of these magnificent islands, by far the greater number of which belong to the Kingdom of the Netherlands, is Borneo, which, after icy Greenland, proves to be the largest island but one, and is only slightly smaller in area than New Guinea, measuring 750.000 square kilometers as compared with the 785.000 of the latter. After this large island, we find islands of all possible sizes down to the thousands of small specks in the ocean which only consist of a reef, a hill, or a mountain top rising out of the sea. But what strings them all, as it were, on the same cord is the unity of the girdle which, connected with the mountains of Hindustan by the Andamans, hangs between Burmah and New Guinea, the islands of Sumatra, Java and the smaller ones of the Sunda group in regular loops.

This girdle, — whose volcanic origin is very apparent, for there are in the island of Sumatra alone some 90 volcanoes as likewise in the same proportion on the other islands, the highest peak of which, the "Wilhelmina Piek" on the island of New Guinea being only 300 meters less than Mont Blanc in Europe, — encloses a part of the Pacific which offers safe navigation for shipping.

The Archipelago lies between the Asiatic and Australian continents partly in shallow and partly in very deep seas. The islands of Sumatra, Java and Borneo with the intervening islets form the south-eastern extremity of Asia with which in primeval times it must have been connected, a fact which is clearly proved by the fossil remains of mammals that have been found on the island of Java. If the bottom of the sea were to rise some 45 meters it would be quite sufficient to connect these islands once more by dry land with the continent of Asia. The same is observed between Australia and New Guinea, for a rise of the bottom of the sea of only 20 meters would form a connection between Cape York and New Guinea.

Between these two groups, taken as one mass of land, there is however a large area which exhibits a totally different configuration, for here we find that the islands lie in a sea with a depth of 1000 to 6.500 meters, depths which are almost the greatest to be found in the whole world.

The position of the islands above and below the Equator (from 6 degrees North to 10 degrees South) is of the greatest influence on the climate of the entire Archipelago, both with regard to temperature, the direction of the winds and the rainfall in the monsoons, all of which are also affected by the presence of a large continent on either side.

The temperature is on the whole very equable; no other portion of the world shows such small differences over such a large expanse of territory. On the coast the mean temperature varies between 26 degrees Centigrade at Batavia and 27 degrees at Palembang. The smallest difference between the hottest and coldest, or rather coolest, months are found at Batavia and Padang, viz. 1 degree C., while the greatest difference between the highest and lowest temperatures to be found at Amboina is only of 20 degrees, whereas the extremes of temperature in Holland sometimes lie 65 degrees Centigrade apart. The average daily variation in temperature in the East Indies does not exceed 6 or 7 degrees in the dry season and 4 or 5 degrees in the rainy season. A difference of climate is noticeable at different levels, from the hot climate at the sea-side to the European climate at a height of 5000 metres.

The winds are variable but rarely stronger than a light breeze, with the exception of thunderstorms of course. The monsoons are not the same to the north and south of the Equator, though the difference is not observable in the same degree everywhere.

Throughout the whole of these our Colonial islands, which have sometimes been called "Insulinde", the shipping of the world has found and still finds cargoes in any quantity. That adequate sustenance for the natives could be found there is even shown in the names of the two little islands lying off the top end of Sumatra, which is the most westerly point of the Archipelago, viz. Poeloe Weh or "Soft-water island" and Poeloe Bras or "Rice island".

This group of islands however has also become thanks to the care of the mother country, one of the most important traffic centres of the world for the modern shipping which steams between our Indian Archipelago and the five continents, of which fact I shall give further proof in this chapter.

THE VARIOUS RACES OF ABORIGINES.— Let us briefly indicate the nature of the numerous and diverse races of mankind which inhabit these islands.

As to the inhabitants, more particularly the actual aborigines, the resources of the various islands enable them to carry on their domestic existence in the simplest possible manner, which one need scarcely describe in detail. Protection against the cold is unnecessary except in the mountainous districts, so that clothing of any kind is almost superfluous. Sufficient nourishment, of which nature produces the greatest variety, is to be obtained at the expenditure of a minimum of energy.

Practically all degrees of civilization may be encountered in the Archipelago, such as natives who live by hunting, fishing and farming, pirates, traders, miners and seekers after the products of the forest, all of whom are to be found, almost like separate nations, throughout the islands. In outlying regions we find barbarous men-eaters, while in other parts we see individuals and even entire groups of aborigines that have already attained a fairly high degree of civilization.

By far the greater part of the native population belongs, like that of the Philippines, as is seen from their typical features and their language, to a race of mankind which has spread far beyond the limits of the Archipelago proper. The countless languages, all cognate, have been classed under the generic name of Malayan-Polynesian, although this term does not seem to be quite a happy one because neither Malay nor Polynesian can lay claim to be the most typical or the most developed language among the cognate dialects. There is less objection however to the name "Austronesian" or "Australasian", which has been recently introduced.

A study of all these dialects would however be so vast an undertaking that the various tongues of the Archipelago have not yet all been scientifically investigated, while some of them are not even understood. It is precisely because all these languages are so closely related to the root language that systematic research is urgently desired. Various scientific institutions are now active in this direction, such as the Batak-Institute under the guidance of Professor Nieuwenhuis and the Royal Institute for the study of the Languages, Geography and Ethnography of Netherlands India.

The main characteristic of all the natives of Indonesia may be said to be their religious devotion. In this respect the theory and practice of the Government are based on the principle of tolerance, so that every individual is at liberty to profess any belief and to express his religious opinions, subject to the observance of the existing laws and to the admission of Christian teachers, priests and missionaries for the performance of their vocation, which I shall refer to later.

Inhabitants of the island Bali.

According to the latest census, the population of the best-known island, Java, including Madurah, exceeds 25 million souls, 295.000 of whom were Chinese, mostly born on the island and of mixed blood, and not more than 65.000 Europeans, the greater number of whom were born in the East Indies. From the great increase of autochthonous inhabitants by nearly 20 % during the last decade we may by no means conclude that this tropical country is illsuited to European or other colonists.

Although the various races are fairly well maintained, intermarriage frequently occurs. The nationality and race of the father are as a rule taken as decisive when determining the racial status of any individual of mixed race.

The Indonesian characteristics are very apparent in the European colony; the distinction between the native and the "Indo" (half-caste) is based less on physical peculiarities than on the legal difference which separates Europeans and non-Europeans. We may also mention that it is possible both for the native and the foreign Oriental to be admitted to in the European group by legal conformity or equalization, after which they are also accepted as belonging to this group socially.

From this it follows that the Westerns, all called "Blanda" (Hollander), in the vernacular, are not considered as so many foreigners by the native population. On the contrary of the male Europeans in the Dutch East Indies two out of three are, roughly speaking, natives of the Archipelago, while of the female Europeans only two in every fifteen were born elsewhere. Nevertheless this Western section is maintained as a separate whole and in reality remains purely western in its nature, opinions, ideals and latent energy, side by side with the Oriental groups, to which latter groups the Chinese and other foreign Orientals belong.

Group of Dajaks (W. Borneo).

The Colonial Government is so constructed as to render possible the co-operation of the two kinds of national energy, the one oriental and the other western in character, both of which find ample room for development, without crowding each other out.

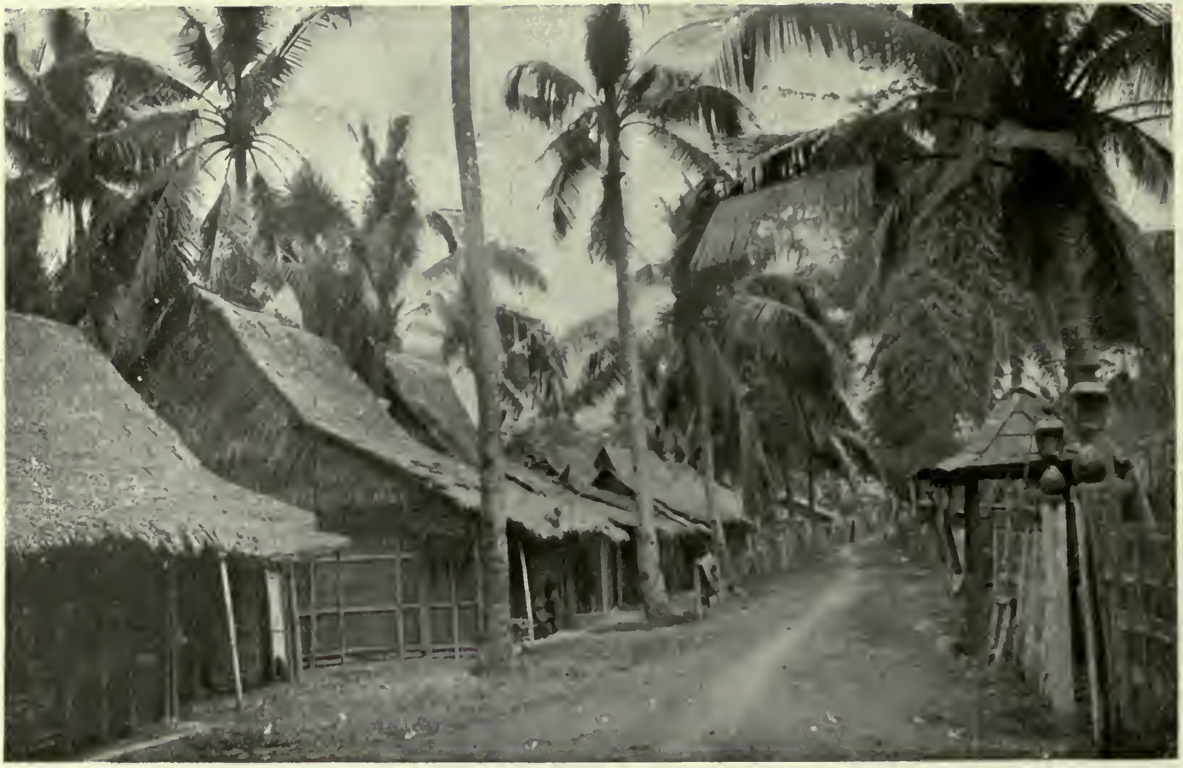
The interests which have to be considered here are however so different and unequal, principally in consequence of the nationality of the bearers of such interests, viz. natives, Europeans, Chinese, Japanese, Arabs and other non-European foreigners, that the influence which these different nationalities have upon the Colonial Government makes such Government more or less into a racial problem, particularly as all the various races desire to be governed on their own lines and principles.

These principles and ideas are however by no means invariable. In fact we often see how, after a long period of association with people of different opinions, the various nations are deeply influenced so that they are capable of great changes which in a previous stage would not only have met with no approval but would undoubtedly have aroused bitter opposition if their introduction had been enforced or attempted.

HOW THE POPULATION LIVES IN THE TROPICS.— Thanks to the tropical climate, the vegetation in the whole of the Archipelago is exceedingly luxuriant, and it is from the superabundant products of this vegetable world that the natives find the principal requirements of life, including the materials where with to protect themselves from wind and weather.

The materials with which the native builds his dwelling and makes a portion of his dress are especially drawn from vegetable products. It is only in the later stages of civilization that the use

Bamboo.



Campong with native dwellings.

of stone walls and tiled roofs became customary; for a long time however the objection was made against the latter that the dwellers would be "diapit lemah" or "oppressed by the earth" and that it would be too much of a sepulchre for the happiness of human beings during their existence on earth.

The ubiquitous bamboo supplies a splendid material for the construction of native dwellings. The stems of the long and thick "petoeng" variety are used as pillars, and the construction of the rest is equally simple. A square notch is made in the head of each pillar and the two ends of a bamboo lath are inserted, thus forming the cross-beam. With the help of his neighbours a native will in this way be provided in a few days with the frame of his dwelling with a simple truss and rafters consisting of thinner bamboos, all firmly pinned together with bamboo nails. For the thatch some "alang alang" (Indian reed-grass) is cut and dried, pinched between two bamboo laths in the middle and turned down and then applied to the roof. With cord and split bamboo "tali" the "welits" or sheaves of grass are then fastened to the rafters and on the top is placed a piece of bamboo with a thick covering of a cloth woven of the fibre of the "aren" palm. The walls are made of bamboo laths, woven diagonally or at right angles, after one of the many methods of the natives, so that the netting forms a comparatively strong wall, and the house is finished.

From this extremely simple type of dwelling, which can immediately be made in every part of the Archipelago, because the bamboo flourishes everywhere in enormous quantities, more complicated forms have been evolved. The degree of civilization of the dweller or even of his tribe can frequently be deducted from the shape and size of his residence. Even the position of the floor, on or above the ground, the latter being the so-called "ḳolong" construction, is a racial characteristic. The native houses in the "Kampoeng" at Batavia for instance were mostly built under the influence of Javanese or Balinese architecture, and rest on the ground, whereas at no great distance to the south, the raised floor of the Soedanese already predominates. Even the pile-dwelling type is frequently met with. In this way we can recognize the various peoples of the Archipelago from their very divergent styles of architecture, so that one might here almost apply the saying of the French academicien: "Le style c'est l'homme".

The dress and clothing of the natives may be compared with their houses, for both are exceedingly simple and graceful, and both show the characteristics of each race.

The same inexhaustible resources of nature provide the material for the primitive domestic furniture; a bamboo bench (balé) serves as a seat and bed, and various kinds of mats are woven from rushes, pandan leaves and rotan stalks, from which the native also makes the bags and pouches, indispensable attributes of his wanderings in the forests. In such bags he also carries his tinder, which, with a few dry pieces of bamboo, enables him to make fire. Matches, although long since known to the native, he will rarely use; he retains with pious conservatism the traditional manner of kindling a fire in the jungle, which he then calls "mirocha". Again from the bamboo, which the native can turn to countless uses, hooks are made to hang the food beyond the reach of insects, more particularly of the omnivverous white ant. The coconut shell supplies spoons or ladles, and the leathery sheath of the "pinang (oepih)" leaf forms a most convenient bucket.

In serious conversation.

As to the clothing, it is still customary in some parts of the Archipelago to obtain the materials from the various plants and trees, so that we might say that nature here provides ready-made clothing.

Moreover the clothing in remote parts of a tropical country like this is of an extremely primitive nature, as will be readily understood. In some parts, the dress of the natives is restricted to a few and apparently unnecessary ornaments, such as in the case of the natives of New Guinea in the east and of Enggano in the west. In fact it would not be incorrect to assume that among all the peoples of the Archipelago clothing and ornament are synonymous.

From the animal world, which is as generously represented as the vegetable world, only shells, the teeth of the wild boar, the claws of tigers and the scales of the ant-eater are used according to the local fashions, which have been maintained unchanged for centuries.

In spite of the extraordinary variety and peculiar characteristics of the dress of the various tribes, one broad general line can be traced through them all, from the simplest clothing to the most complicated state dress. The cord round the waist from which hangs a shell to serve as covering, found on the most primitive Papuas, will be recognized in the elaborate belts with buckles "saboek" and "èpèk" of the daintily dressed Javanese dandies.

From this original cord have then been developed the various forms of aprons, in some cases bandages which are tightly drawn between the legs and fastened to the same cord at the back. These bandages were first made of leaves or bark, which later on were artistically plaited or woven into cloth. Throughout Java this loin cloth (the "jawed") is still the usual costume for labourers except where, in certain villages, the "sawah" or ricefields are worked in a dress of which Adam is said to have been the inventor.

"Missigit". (Mahommedan mosque).

As to the decorations of this loin-cloth, which are frequently beautifully conventionalized, I shall say a few words later on when describing the native industry called "batik".

Sufficient attention however has been paid to the care which a native devotes to his exterior. A few words have also been said of his spiritual life i.e. of his meditative-religious nature. The natives are on the whole followers of Mohammed, but spiritual care on Christian principles is also given by a strong group of westerns.

This work of civilization chiefly takes the form of converting heathens to the Christian faith, and is frequently accompanied with many difficulties in consequence of the original distrust of the natives and their suspicion of the proclamation of an exalted gospel of love and abnegation by the missionaries of an overruling nation whose representatives in practical life often show but little proof of possessing such virtues themselves. On the other hand the prestige derived from political supremacy is propitious to the acceptance of the cult of the dominant race.

Both with respect to the number of converts and the genuiness of the process of conversion, missionary work in the East Indies has led to much discouragement, while the schism and factions in the bosom of the Christian church turned the faith into a source of contention instead of something higher and nobler. A war such as was lately going on in Europe and elsewhere, the sounds of which naturally penetrate far beyond the limits of our continent, is ill suited to convince the Mohammedan, Brahman and heathen natives of our East Indian Archipelago of our good faith or to give them a high opinion of the deeper morality of European nations, who slaughter each other while calling upon the name of God.

From a humanitarian standpoint the great value of missionary work principally lies in the fact that a disinterested western settles in the midst of the so childishly simple population of the Archipelago, encourages them to do good and restrains them from evil, and is always ready and willing to give advice and help. He takes upon himself a beneficient and blessed task, more or less assuming the patriarchal duties elsewhere performed by the Kjai's and Walian's.

On the whole it may be said that the missionaries of Christianity have in many respects obtained good results, particularly on the islands called the Outer Possessions. They promote civilization and general development, public order and national education by means of about 2000 missionary schools spread over the Indies and which are attended by about 150.000 scholars. Material help is afforded by supplying simple remedies to the needy native population and by medical assistance and advice. The native "adat" or private law has been amended greatly to their benefit. The missionaries also promote native agriculture in all its forms and have thereby considerably raised the standard of welfare of the native by supplying the means of a more regular source of livelihood; they have also established savings-banks here and there, and culture generally is promoted by the ethnological and linguistic researches of the missionaries and learned men sent out by the Netherlands Bible Society. The devotion of the Christian native to the Royal House and authority of the Netherlands is also promoted by them, and his value in the military sense is even increased, so that he now belongs to the most loyal subjects among the population of these possessions overseas.

Corpse-platform of the Dajaks](West-Borneo).

Tropical vegetation.— By reason of the warm, damp climate the vegetation throughout the entire Archipelago is of a most luxuriant nature. Wherever the work of exploitation and exploration has not yet penetrated we find the more or less impassable primeval jungle of the tropics stretching from the coast to the very mountain tops. Rarely however does any particular species of tree or growth dominate. The valuable "Djati" or teak (Tectona grandis L.) occurs everywhere but more especially in Java. A forest of these trees, if seen in the dry monsoon, when its widespreading branches are bare of leaves and the parasitical plants are visible like thick green nests among its boughs or when the trees are covered with young leafage and enormous plumes of grey flowers rise above the large pale green leaves, is a remarkable sight.

I have already touched upon the many uses of the bamboo, also a graceful plant, whole forests of which are encountered on the mountain slopes particularly in East Java. Such woods afford regular shade; the ground is covered with a thick layer of fallen leaves which forms a most convenient bedding for "saprophytes" (vegetable organism living on decayed organic matter). Palm trees are also to be found almost everywhere, but, owing to their comparatively sparse growth, they do not affect the general appearance of the tall-trunked forests of the Indies. On

Well grown teak plantation, 20 years of age.

the coast, whenever there are no marshes, and more especially on many of the smaller islands, the coconut tree (cocos nucifera L.) grows in great profusion. At the top of the tree an enormous bunch of flowers appears, upon which the fruit is produced.

The extraordinary wealth of climbing plants, epiphytes and parasites in the tropics is most striking; the plants which belong to the most divergent species, are equipped in all sort of ways to enable them to grip other plants and to raise themselves to where they can find the light necessary to their existence. The rattan is one of the plants most available for practical use.

Wherever these forests have been cleared and the ground left uncultivated, a wilderness of tall grass, the "alang-alang" has generally taken their place especially in Java. There is also a wealth of all kinds of vegetation which has sprung up, such as fruit trees and other useful plants, so that in many densely populated regions, as in the lowlands of Java, it looks as if the jungle could hardly be interrupted by ricefields; these are the native "kampoengs" to which Junghuhn has given the name of "village woods".

And finally wherever we look we see a superabundance of multicoloured flowers. It has been said that the East Indies possess but few flowers, but this is not true. The number of flowers to be seen in the meadows, along the lanes and in the populated districts are certainly less plentiful than in Europe, but in the jungle they grow in countless numbers and cover the ground and the waving branches of the forest giants to their very tops in the greatest variety of form and colour.

Amongst the uses, to which the vegetable world has been put for economic purposes

Cocosplantation on the Eastcoast of Sumatra.

regular agriculture naturally ranks first and foremost. For this purpose certain nutritive plants have been selected from the flora with a view to more general cultivation in order to furnish the community with foodstuffs. A number of cereals are more especially grown in the Archipelago, the principal being rice ("padi"), which is highly esteemed for its nutritive properties in this climate. The "djagoeng" or maize is a good second, and then follows here and there, barley.

The degree in which untamed nature is made use of or regular agriculture is practised enables us to estimate and distinguish the stages of civilization of the various groups of inhabitants in the Archipelago.

Agriculture and public works.— Until quite recently the native farmer had been left far too much to his own resources; the care of the Government had been chiefly limited to encouraging the natives to regular cultivation of their fields in order to prevent failure of crops and, consequently, famine among the population. After the substitution of the so-called "Government-cultures" by private industry on a large scale, the care of the Government with regard to agriculture took a more secondary place and it was only after the earnest application by private individuals of European science and technique upon tropical cultures that we can speak of the general rise of the East Indian agriculture proper.

Under Prof. Dr. M. Treub an attempt was made in 1905 by the establishment of an Indian Ministry of Agriculture to obtain favourable results with national culture of crops, which are mainly practised by the population for the supply of the necessary foodstuffs and which consequently are of genuine national importance, side by side with the cultivation of products for the European market. The object of this Ministry is to find ways and means of obtaining more satisfactory and permanent results from native agriculture. For this, many scientific experiments have been made in order to discover the cause of the failure of rice crops and the circumstances which might have been of influence in this respect. Special fields have also been cultivated under supervision of government officials in order to demonstrate the possibilities of the soil and special courses are also given in theoretical and practical agriculture and horticulture.

This Department is also charged with the management of the State lands and forests, to which also belongs the cultivation of coffee, partly carried on by order of the Government, but which will shortly be discontinued entirely; the Government also owns a Cinchona plantation in the Preanger Regencies. The Government owns, a gutta-percha plantation in the same Regencies, about a dozen rubber plantations in the island of Java and one rubber plantation (para-rubber) at Langsa in Acheen.

The teak forests of the State, comprising all the teak forests in the island of Java, are either regularly worked by the Government or leased to private companies for the cutting of timber. And finally, what may also be considered as a part of the promotion of physiological research, for which purpose this Department maintains a large staff of experts and numerous laboratories, libraries and museums, planters and farmers are given advice and information and are also furnished with seeds and useful plants from the famous Botanical Gardens at Buitenzorg.

Sawahs near Garoet.— Tjikoerai in the background.

One of the other Indian Departments, that of Public Works, more particularly cares for the highways and civil public works, for the construction, repair and maintenance of buildings employed for the coast lights and other buildings required by the Department of Marine, for steam engineering and safety in factories and workshops, for laboratories for the examination and testing of materials and the administration of the civil stores of the country. All these subdivisions need not be further detailed because much of it is not different from similar work done in the colonies of other nations.

This Department however derives its importance above all from the irrigation works which are constructed by the State. This irrigation, or in other words the proper watering of the rice-fields, dates from the very earliest period of our influence in this Archipelago and possibly even existed long before that time; it may safely be assumed that this artificial watering is as ancient as the selection of permanent dwelling places by the Indian population, who regularly cultivated fields beside them..

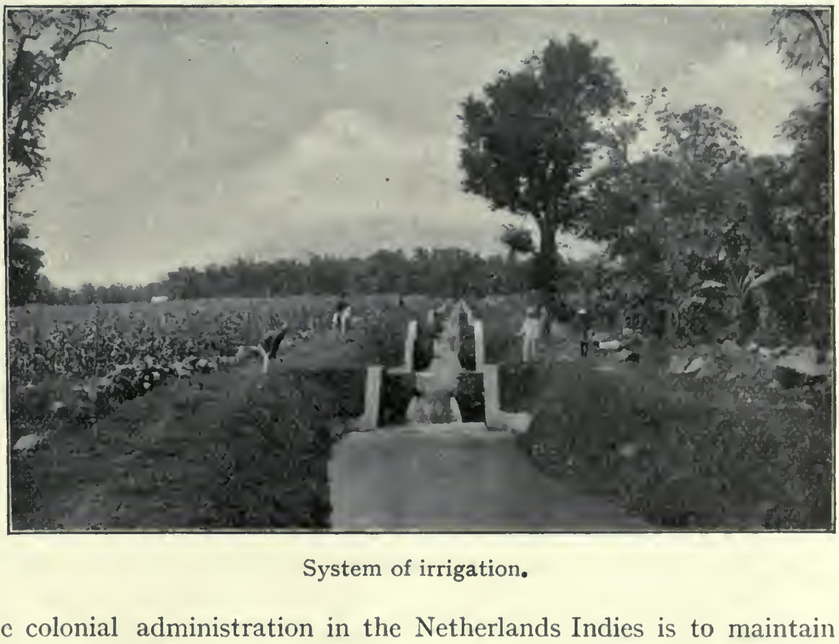
In central Sumatra artificial means of irrigation were in use from very ancient times, including scoop-wheels, bearing names that remind one of the equally old spinning wheel. On the island of

Bali the "soebak" system for a more common irrigation of the rice-fields is used, which has been worked out in elaborate detail. A most remarkable fact is that for the discovery of subterraneous supplies of water and for the conducting of these waters to the fields and newly cleared spaces, native experts or "water diviners" are preferably consulted, experienced water-finders, such as we also know in Europe, who in the East play a most important part because of their useful talents with the divining rod.

The Department of Public Works is continually engaged in making new works for irrigation purposes and has of late years also greatly extended its care in the road system and has caused highways on a large scale to be laid down both in Java and the Outer Possessions. An extensive system of roads is, for instance, in course of construction in the island of Sumatra; a Gaju Road and a Middle Sumatra Road are already practically completed.

The principal roads are exceedingly well kept, particularly in Java, and compare most favorably with similar works in any other colony. Their length on the island of Java and Madurah is 23.800 kilometers and they pass over 253 large arched stone bridges, 1534 smaller bridges and 9473 iron or wooden bridges, besides 32950 small culverts. These figures do not even include the roads in the "Vorstenlanden" (The Principalities) and the private estates, which are estimated at some 3000 kilometers and some 30 kilometers of bridges.

The cost of the construction of a main road is now estimated at eight to ten thousand guilders per kilometer, though there are more difficult cuttings of which the cost even rises to fifteen thousand guilders per kilometer. The labour required for their construction and, partly, for their maintenance is paid for in money, since serfdom has for the greater part been abolished. In the Outer Possessions, with the exception of a few districts, the native population is still obliged to supply labour for public works on behalf of the common good. The payment of taxes in the form of labour is however gradually disappearing in the Indies and is being substituted by payment in money and, consequently, all labour is gradually being paid for in money. This is one of the many effects of more modern opinions in the government of our colonies.



System of irrigation.

CHARACTERISTICS OF OUR COLONIAL GOVERNMENT. — The object of the colonial administration in the Netherlands Indies is to maintain order and justice, to promote the prosperity and satisfaction of the inhabitants and to develop the natural resources of the country. For this purpose it is necessary that the minor native authorities, who frequently only govern a very small portion of an island, shall form part of an organized government adopting the supremacy of the law instead of its own policy. However, the customary laws of the natives, on which their jurisprudence is based in the form of the "Adat-law" are left them in a most liberal way. A powerful and enlightened, omnipresent central authority is required which awakens the latent national energy and leads it into new channels. In order to attain this object, it is indispensable that the door should be opened to knowledge, energy and capital, which are not found, or only in insufficient quantities, in the country itself; this virtually means the opening of the territory to foreign trade, labour and capital.

The satisfaction of each of these demands with a view to maintaining a powerful central authority, such as the import of foreign energy and capital, and the development of the energy of the native population, does not always progress at the same rate. It is more particularly the last mentioned demand which is not always complied with and consequently its progress lags behind that of the others, both owing to lack of co-operation on the part of the natives themselves and from the fact that this demand is not always fully understood by the authorities themselves. Indeed we may say, that the exercise of authority runs the risk of becoming an object instead of a means, thus suppressing national energy instead of arousing it, if the general plan is not sufficiently developed or if the consciousness of moral responsibility is absent in the Government. This danger, a germ of which will be found in every political state, will frequently assume greater proportions in a colony than elsewhere. It is therefore more necessary, that in a colony the officials of the administrative Government should be awake to the dangers of such one-sided exaggeration, than in a country where the Government and population belong to the same race and degree of culture.

Crater lake in Java.

In order to find the correct balance — the greatest difficulty in every colonial system — the Government requires an autocratic mind and in the Netherlands Indies it is, with the exception of its police and fiscal vocation, given a large amount of discretion, though on the other hand, in order not to paralyze the historic development of national energy, the native population has been allowed to retain many of their own institutions and customs and also complete freedom in the management of their own communal economy.

I have already spoken above of the "Adat-law", on which an excellent book has been written by the celebrated Professor Van Vollenhoven, to whom I have referred in the chapter on Dutch sciences.

Our Insulinde is therefore a "native colony" in the fullest sense of the word. This means that the Indian colonies form a territory where the native inhabitants, after having come into touch with foreign immigrants of western races, do not decrease; on the contrary they exhibit an enormous capacity for increase, thanks to the sound guarantee of public order given by the Government and the great increase of the means of livelihood, which in their turn, as already described above, are direct results of an energetic development of the natural resources of the country.

According to the census of 1895 taken upon the principal of the islands of this Archipelago, viz. Java (with Madurah) the population was 25.802.593, of whom 25.475.392 were natives, 256.055 were Chinese, 51.484 Europeans, 16.283 Arabs and 3.379 other foreign Asiatics; the census of a decade later in 1905 showed the following greatly increased figures. 30.099.713 inhabitants, of whom 29.717.527 were natives, 295.243 Chinese, most of whom were born on the island of Java and were of mixed blood, 64.934 Europeans, mostly born in the Netherlands Indies, 19.166 Arabs including those born on the island of Java and 2.843 other foreign Asiatics, the last being the only figure that has decreased in comparison with the other groups.

Hevea interplanted with Robusta-coffee.

The fundamental principles of colonial Government are laid down in the Regulations for the Government in the Netherlands Indies, which have been fixed by the Netherlands Legislature.

The powers of Government are exercised by the Governor-General in the Netherlands Indies, in accordance with these regulations, who, as the Sovereign's representative, is appointed and dismissed by him, and who is supported by the Council of the Netherlands Indies. In certain cases the Governor-General in the execution of the legistative power, has to act in accordance with the council of the Netherlands Indies, and if he does not agree with this Council, he may appeal to the decision of the King.

The administration proper is divided among various Departments with Directors at the head of them.

After the inhabitants had been granted the right of say in local matters by the institution of municipal and local councils, a National Council was established in 1918, an advisory board, to which is entrusted the treatment of the Indian Estimates in the first instance.

Whereas the supreme powers at home, in the Netherlands, are exercised by the Minister of Colonies in the name of the Queen and the Minister's signature is required to every document which is issued by the Queen as Supreme Governor — as already described in a previous chapter on the form of Government in the Netherlands — the Governor-General controls the various Departments of Government in the Indies themselves and is also the Commander-in-Chief of the Army and Navy forces in the Colonies, inclusive of the rights of declaring war on Indian princes and peoples, and of concluding peace and other treaties. subject to the commands of the Queen.

In the various provinces administration is entrusted to the care of the heads of provincial

Government (Governors or Residents), assisted by Assistant-Residents, "Controleurs" (Districts Officers) and Civil Administrators.

The form of Government is on the whole still autocratic. There is a strong tendency prevailing, especially in the Indies themselves, — both in and outside the National Council, — to establish the Government on more democratic principles, whilst the Supreme Powers in the Netherlands have been found willing to take this new course. That a greater political independence should be granted to the Dutch Indies is now almost generally admitted, but the rapidity at which reforms can and shall be introduced is still one of the principal points at issue.

22 1/2 year old gutta-percha trees (Pal. oblongifolium), at Tjipetir.

Oil palm estate.

THE EAST INDIAN DEFENCES.— The reader who has attentively followed the preceding notes will conclude that the Dutch authority in the Archipelago is not based on force of arms nor on the right of the strongest; nothing is less true than this. Our authority is based on the prestige which a certain stage of civilisation gives us above another. The native population in India is so far still at the stage of service and obedience to the "Blanda" (Hollander) although certain signs of a change of attitude are gradually appearing. It is however entirely at one with the oriental character that whoever desires authority shall be able to exercise it; it is therefore an undeniable fact that our authority had first to be founded by force of arms, and then by means of a tactful policy caused to be accepted by the population. That this is actually the case is shown from the comparatively small force of the army which is required for the maintenance of peace and order in this immense territory. We do not only come here to take things home but also to bring things, and among the things we bring are law and order. It is the maintenance of these two things which has often rendered necessary an exhibition of force and even the exercise of force, particularly against the native chiefs.

Hence the maintenance of local land and naval forces is required for this purpose.

Our Netherlands Indian army was exclusively composed of volunteer Europeans, recruited both in the Netherlands and in India, and of natives, also volunteers, of various nationality from these colonial possessions. The latter chiefly consist of Christian Menadonese and Amboinese who are paid higher remuneration than the other races because they make the best soldiers.

Compulsory military service has now been introduced for Europeans, whilst it is intended to extend this to the native population as well, for which the co-operation of the National Council is, however, required.

At the head of the army is placed immediately under the command of the Governor-General, who is the commander-in-chief, a Lieutenant General. The various arms and services consist of infantry, cavalry, artillery, engineers, general staff, army administration, medical service corps and a topographical corps. In ordinary circumstances this Indian army, of which the greater part is stationed on the island of Java, consists of 21 field battalions, 4 machine gun companies, 10 garrison battalions and 3 garrison companies, 3 depot battalions, 4 field squadrons of cavalry, 2 divisions of field artillery with 2 batteries each, and one detachment of mountain artillery with 4 batteries together with the necessary fort artillery companies all armed with quick firing guns, and 2 train companies, besides the respective aviation services. The engineers comprise field companies and the railway and telegraph companies, and there is a police corps divided into 5 divisions and 1 company of cyclists.

The task of this army is twofold; the defence of our possessions against foreign invasion and the maintenance of peace and order in the entire Archipelago.

The Navy is under the com-

Rattan seekers at work in the forest.

A pepper garden.

mand of a Flag officer who is also the Chief of the Department of Marine at Batavia. The men-of-war available in ordinary circumstances consist of a squadron of 5 armoured and armoured-deck ships and of 6 torpedo-boat-destroyers, 4 flotilla vessels, 4 observation vessels for topographic work and a number of torpedo boats and submarine boats that is constantly being increased.

During the stay of the squadron in the Netherlands Indies its expenses are charged to the Indian budget, although the necessary repairs are paid for by the Netherlands; the flotilla and observation vessels and the torpedo boats form the so-called Indian Military Navy, which remains in India and is entirely paid for by the Indian Government.

The crews consist for about two thirds of Europeans, the rest are natives; the crews of the observation vessels consist entirely of natives. The entire European crews belong to the Royal Navy of the Netherlands; they are sent out for a service of 3 years with the naval forces in the tropics and relieved "à tour de rôle" either by returning home as the ships change their stations or by mail steamer. The crews and officers consist of the Flag officer, 15 superior officers, 189 subaltern officers, 81 engine-drivers, 1800 European and more than 1000 native petty officers and sailors.

Side by side with the military marine there is a Government Navy which is more especially used for police duties in the Archipelago.

Besides the more military purposes and uses of the Navy there are quite a number of peaceful maritime and scientific functions which are looked after by the Department of Marine or Admirality, such as laying buoys, coastal illumination, pilotage, hydrography, the magnetic and meteorological observatory, and the installation for wireless telegraphy, which is established Bandung.

THE GENERAL ECONOMIC PROSPERITY OF THE POPULATION AND THE FUTURE OF THE EAST INDIES.— It would not be right to conclude the general remarks on the colonial possessions in the Netherlands Indies with the preceding notes regarding the Army and Navy. For as we have already remarked, the forces are required for nothing more than the promotion of the general safety in our colonies, not only on the most important islands such as Java and Sumatra, but everywhere else in the Outer Possessions too. The fact that this feeling of safety and rest is present almost everywhere, throughout the colonies has to a large extent been the means of bringing out the native population more and more. Until the beginning of this century a certain abstaining policy as to the less important Outer Possessions was perhaps too much preached in India; the anxiety that our resources would not be adequate to maintain our authority in these distant possessions was often a motive for this policy. The results of an entirely different line of action in later years clearly showed the incorrectness of these former views. The rapid development of India during the last ten years runs parallel with the development of the Outer Possessions as the fruit of an active policy and a powerful administration system.

What is most striking during this period is the enormous expansion of the various sources of prosperity for the native population. The mere fact that the proceeds of the customs and export duties and excise were more than doubled during the last decade already proves great prosperity. But far more eloquent is the increase of the value of the imports of various products grown or collected by the native population. This was inevitable. It was not until the isolated districts were given sufficient outlets by means of traffic-roads and the population was released from its isolation, that the needs of the population were aroused and the demand for greater prosperity was created.

The new state of affairs did not, however, only benefit the population in a material sense.

In the year 1900 the number of pupils visiting schools conducted by the Government was only 91.572, but fifteen years later this figure had increased to 270.000, while during the same period the number of pupils at private schools rose from 61.000 to 163.000, so that the increase of the pupils was from over

Nutmeg trees.

Vanilla bush laden with fruit.

150.000 to more than 430.000. Moreover, a sort of simple popular education has developed during the last decade, imparting the most elementary knowledge annually.

Side by side with better developed scholastic education, the medical service, the administration of the law and a number of other interests, not merely of a material nature, were much better attended to.

In fact, many Indian natives attend our universities in Holland, especially as students of law and medicine. The principal event here was perhaps that by the actual assumption of the colonial task in the Outer Possessions, the division between one portion of the Indian Archipelago (Java) and the other disappeared and the formation of a genuine political whole was by this means made realizable, though a sound decentralization is aimed at. Those who want to know more about the Dutch colonies in the East Indies than is given in the above brief outlines are referred to the Society "Oost en West" (East and West) at the Hague and to the Colonial Institute at Amsterdam.

There has been so far no ground why reasonable and fairminded foreigners should covet this colonial empire, seeing that we offer hospitality in our colonies to persons of various nationality and afford everyone equal chance to attain prosperity by means of hard work on our territory.

Individuals of various nationalities can live and work in peace side by side, to their own advantage in a relation to each other which in these days may be considered ideal; we gladly offer this to foreigners, and their prosperity will even improve our relations to them.

The Netherlands should however guard her territory, so that neither the horrible desire for expansion which has attacked the nations of to-day, nor political intrigues shall create a foolish envy of our colonial possessions, which may lead to the fall of our fine colonial empire in India, without affording the conquerors equal chances of prosperity, such as are also to be obtained by international co-operation.

We therefore open up our territory to well-intentioned foreigners, who are all welcome.

But above all, we are to see to it that we are and remain masters in our own Indian House.

IMPORT AND EXPORT TRADE OF THE NATIVES.— Having endeavoured in the preceding chapter to sketch the importance of the Dutch colonial empire in Asia on its own merits, I shall now try to give a synthesis of its value for the motherland in Europe and for international trade in general.

As an introduction it may first, however, be pointed out how the inland population, of whom I tried to give an impression just now, is to some larger or smaller extent dependent on non-Indian production for the supply of its clothes, — in so far as these are needed, — of its food, of its means of light, both material and spiritual, and of a great number of daily necessaries. Moreover, the help of intermediaries is required for an adequate distribution of the articles of inland production.

The import trade has to see to the supply from abroad and to the inland distribution. The first task rests mostly in the hands of Europeans, whereas the distribution of both the goods imported and of the inland productions is chiefly the work of Chinese and partly also of Arabian merchants. The natives hardly occupy themselves with commercial interests; most native workers in Java, which is the principal island, are husbandmen. There are signs noticeable, however, that this will change, for several cultured and enterprising Hadjis or spiritual leaders of the native population have recently shown an increasing interest in carrying on trade, while in the "Buitenbezittingen" (the Outer Possessions) the Malay and Buginese maintain their ancient reputation as merchants and navigators.

The export trade handles the export of the opulent forest-productions and other agricultural produce of the soil that were mentioned in the preceding chapter. In so far as the latter are productions of an agricultural industry pursued by Europeans, they directly find their way from the producer to the exporter. If, however, they are the productions of native agriculture itself the co-operation is required of an intermediate trade, which collects them with the native producer and delivers them to the exporter. The Chinese in this respect play an important part. This trade is materially assisted by the existing Indian banks, which often advances to shippers considerable sums of money on documentary bills of exchange.

Export-duties are levied on hides, tobacco, tin, paraffin oil, benzine, gasoline, eatable birds' nests and forest productions, in Atchin also on pepper. The export trade naturally depends on suitable opportunities to reach foreign markets in an expeditious, cheap and regular way, and in this respect the Dutch East Indies are in an extremely favourable position, owing to the excellent shipping connections with Europe, Singapore, British India, China, Japan and Australia.

Loading coprah into boats at Toli-Toli.

THE MOST IMPORTANT OF EUROPEAN CULTURES.— The rearing and cultivation in our colonies of products belonging to such cultures as are called "European" on account of their significance for the world's market, is carried on either on flat or on mountainous fields. The former group comprises *sugar*, *tobacco*, *indigo*, *cotton*, the latter including *coffee*, *cocoa*, *tea*, *pepper*, *caoutchouc* and some *spices* that are mentioned below.

Of all these *sugar* takes the first rank, not only for its being the principal article of export from the Dutch East Indies, but also as it is the chief product of the principal island, viz. Java, where in 1914 total private exports amounted to 341 million guilders, sugar taking a share of 188 million guilders. These figures have increased still further. Casting a glance at the rising curve forsugar on a diagram of Indian export, we notice a stupendous progress of sugar culture and a rapid increase of sugar-export consequent on it, which goes on extending steadily

Sugar cane plantation.

Generally speaking we may assume the critical year 1884, when a calamitous fall in the price of sugar menaced the existence of many a sugar-enterprise, as the startingpoint of this prodigious expansion of the cane-sugar industry. Instead of being discouraged, Dutch industrialists did not hesitate then to furnish considerable sums of money on behalf of the distressed industry. At the same time they wisely availed themselves of modern science, by making inquiries after the best methods in which these capitals might be applied to the benefit of their agricultural undertakings and manufactories. Thanks to this sound and beneficial concurrence of energy, capital and science, the sugar industry of Java has now come to be founded on an extremely substantial financial basis, while, considering the results of crop and manufacture, Java is foremost among the cane-sugar producing countries of the world. Of the total amount of sugar produced not more than 20.000 tons are used for home consumption; sugar (base 96) goes to the United States of North America, Hongkong and Japan, the rest being shipped to Europe and Australia, whilst British India is the chief consumer of white sugar, which is used directly without being refined. A few enterprises go in for the distillation of *arrack*, *alcohol* of a high degree or *methylated spirit* as by-products, in quantities of some 4 million litres annually.

The second principal agricultural industry of the lowlands is the cultivation and preparation of *tobacco*. When comparing statistics of export, we observe an increase from 15 million kilograms exported from Java and Madura together with more than 6 million kilograms exported from the Outer Possessions, principally Borneo in the year 1882 to some 49½ million kilograms exported from Java and Madura and about 18 million kilograms exported from the Outer Possessions in the year 1914. Stating the value in money, we get an approximate total amount of 63½ million guilders for tobacco, exported in 1914, of which Java and Madura exported to the value of more than 19½ million guilders and the Outer Possessions to the amount of some

44 million guilders. Borneo tobacco being annually exported to an amount of some 3 million guilders.

The whole quantities of tobacco exported from the Outer Possessions in the year 1914 came from the east coast of Sumatra. Java tobacco is all but exclusively sent to Holland directly, whereas about one half of Sumatra tobacco is carried to Singapore and Penang, generally, however, to be trans-shipped to the Netherlands, so that also the world-famous Sumatra tobacco is almost entirely put on the market in the mother-country.

Tobacco culture in Sumatra is pursued on grounds for which concessions have been granted according to agreements with native princes, having previously been brought under cultivation by means of a costly drainage-system, and planted with observance of a seven years' lying fallow. The cultivation is largely hampered owing to a deficiency of labourers, who therefore have to be engaged from elsewhere, mainly from China, Java and British India. Notwithstanding these impediments tobacco-growing on the east coast of Sumatra has developed into a most flourishing industry as a result of the exceptional quality and excellence of its product. In but a short time a desolate tropic wilderness has been transformed into a thriving country, having at its command a railway, roads, bridges, hospitals, schools, beautiful towns, settlements, an important harbour and an industrious population. More than a hundred tobacco enterprises are established at Deli, which chiefly go in for the cultivation of wrappers, whose fine colour at once strikes the eye of every experienced smoker the wide world over.

Tobacco culture.

In Java the tobacco industry is mainly distributed over the districts of Besuki, Pasuruan, Surakarta, Djokjokarta and Banyumas. In a few places tobacco is grown here after European examples, for the rest it is cultivated by the population as a native culture for both the European and the inland market.

After the growth has been in the field for about three months, the leaves ripen, when they are plucked to be hung on stakes in oblong and high drying-sheds that can be shut off; great care is then taken that the leaves are not injured by mildew. Next they are transferred to central fermentation-sheds, stacked up and restacked, until the fermenting process is over. Then the tobacco is ready to be sorted in to various qualities, a lengthy and elaborate task, requiring much and skilled manual labour. This done the harvest is packed, provided with trade-marks and dispatched.

Selection of seed, methods of obtaining seed, overcoming of diseases and plagues and the

Young plantation of tobacco in Upper-Deli.

rearing of the largest possible leaf have been made subjects of scientific investigation both in Sumatra and in Java.

Among mountain cultures that of *coffee* is the oldest. As soon as the way had been cleared for it, after waste mountain-fields had been let out on long lease, this culture expanded to an enormous extent in the island of Java. The period of rapid rise was followed, however, by a serious collapse, which is evident from some figures referring to the same dates as have been given above in connection with tobacco culture. In 1882 private exports of husked coffee and coffee in the husks from Java, Madura and the Outer Possessions still totalled 35 million kilos, whereas in 1907 these figures had fallen to only 20 million kilos. Of late years some revival has been noticeable. The year 1915, for instance, showed a private export from only Java and Madura of as many as 35 million kilos approximately.

The "coffea arabica", cultivated first, did not turn out to be of general adaptability in Java, owing to its being liable to coffee-leaf disease and atmospheric influences. The same was experienced with its substitute the "coffea liberica". The efforts made to render the grounds that have been brought under cultivation, profitable for the growing of coffee, almost proved a failure. In spite of all this attempts were not given up. New varieties were obtained by cross-breeding of the two said sorts with the "coffea robusta", introduced from Africa, yielding good results at the outset and promising brighter prospects, although the surplus production of coffee in Brazil has practically arrested the progress of the Javanese coffee culture for the time being. The "Society for Coffee-trade" at Amsterdam and the "Society for Goods Trade" at Rotterdam are ever active to promote our national coffee-trade.

Part of the coffee plantations that have lost their value have consequently been converted into *cocoa* plantations, but also this culture dashed the expectations entertained at the beginning. Java's soil has undoubtedly proved fit for the cultivation of cocoa trees, but their productivity is sometimes completely counteracted and seriously hampered by animal pests, means adopted to fight these having as a rule failed.

Better results have been gained in *tea* culture. Statistics of the years 1882 and 1914 point to an increased value of about 25 million guilders, which must be ascribed entirely to Java production. Of late years tea culture has been successfully introduced to Sumatra's east coast. By reason of its cleanly and careful handling the cultivation of tea in Java has won a good name in the world's market, to which in 1914 a supply of 32 million kilos was sent. The chief markets are in Amsterdam and in London, where 14 and 9 million half kilos respectively are regularly turned over, whilst a not inconsiderable part is reserved for the EastIndies themselves and some 6 million pounds are annually consumed in the mother-country. Owing to a deep-rooted idea, it is said that alcohol consumption per head of the inhabitants of Holland is extremely high, but the simple fact is, that in this country coffee and tea are drunk as the national drinks par excellence, cigars and tobacco being the most popular of national luxuries.

Intermediately between other growths, mostly planted alternately with coffee, *kapok* has been cultivated besides cocoa, recourse being had to *pepper* also, neither showing quite satisfactory results at the outset, though the exports of 1914 represented a value of about 11 million guilders.

A more favourable issue of modern cultivation has been shown by *cinchona* culture, thanks to the support of the Government which has availed itself of Hasskarl's interesting wanderings in The Andes.

Though not comprised in what is meant by "Lowland and Mountain Cultures", mention must be made of such important articles of export to the Dutch and other European markets as products of forestry which have been referred to in the preceding chapter. First of all there is the cultivation of *coprah*, with a steadily increasing export, being of scarcely any importance in 1882 and extending to a value of 61 million guilders within 32 years. The export of *india-rubber* and *para-rubber* also rose from some hundreds of thousands of guilders to 26 and a half million guilders in the same period, whilst getah, such as *getahpertja* (Palaquim kinds), not to be confused with the last mentioned products, was exported to the amount of about 3 and a half million guilders. In 1913 this number was 6 million guilders, among which were two million for getahpertja. Next we come to the exportation of *rattan* to the extent of 5 million guilders. Though they are not forestry products, I must also point to the export of various sorts of *rice*, amounting to only half a million guilders in 1882 and risen since that date to a value of more than 6 million guilders.

Speaking of exports, we should not omit a few important mining-products, such as *petroleum*, exploited in Java chiefly by the "Dordtsche Petroleum Maatschappij" (Dordt Petroleum Company) and the "Bataafsche", and in the Outer Possessions by the "Koninklijke Nederlandsche

Coffee picking.

Coffee blossom and fruit.

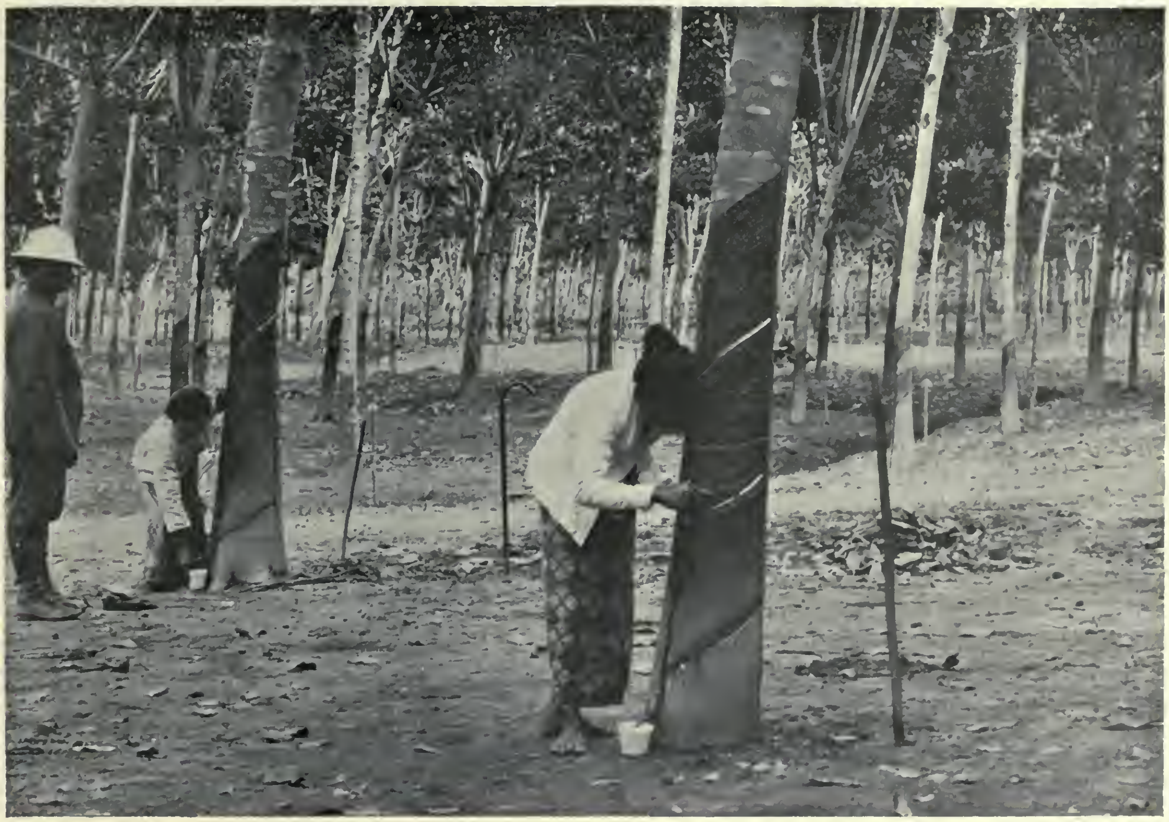
Maatschappij tot Exploitatie van Petroleumbronnen in Nederlandsch Indië" (Royal Dutch Company for the Exploitation of Petroleum Springs in the Netherlands Indies), which exported in 1914 a total amount of petrol and gasolene to a value of 72 and a half million guilders, together with petroleum-residue to the amount of 6 million guilders. Further the Indian mining-industry contributed to the general exports of 1914 an amount of *tin* of 83½ million guilders, 36 million guilders of this being for Government account. *Precious metals*, mainly native to the south of Sumatra, are exported to an average value of more than five million guilders per annum. With the exception of tin, mining-products go almost entirely to countries other than the mother-country.

Smaller cultures worth discussing are *vanilla* "Epipendrum vanilla", a Java growth, containing 0.75 % "vanilina" more than the best Bourbon vanilla. Of more or less general importance are *cola-nuts, nutmeg, mace, clove, canella* ("cassia vera"), as articles of export from the East Indies, nearly always going to the mother-country. On the whole it must be admitted that the significance of spice exports, in former times one of the most prominent attractions of Insulinde and one of the most valuable monopolies of the "Nederlandsche Oost-Indische Compagnie" (Dutch East India Company) in the period of its culminating prosperity, has sunk considerably.

The mention of the East India Company leads me to a discussion of this once so powerful body, as indeed, — just as in the case of Holland itself, — we can scarcely give the reader an adequate sketch of the importance of our colonies in the present day without connecting it with a brief review of the past.

HOW THE EAST INDIES ARE CONNECTED WITH THE WORLD.— Of course one of the most essential factors in keeping up the prosperity of our East Indian colonies is to maintain a sufficient number of regular oversea communications, not only with the mother-country

A well-kept Java tea plantation.



Hevea tapping.

Steamers of the "Kon. Paketvaart-Mij." in the port of Macassar.

itself but also with the principal ports of international traffic. A number of regular steam-ship lines, to be more fully discussed in the next chapter "Holland on the Water", directly connect the East Indies with Europe, Asia and Australia, for the conveyance of passengers, mails and goods whilst the Archipelago is still more closely connected with these continents via Singapore.

Under normal conditions direct steam-ship services to Europe are entertained via the Suez Canal, Genoa and Marseilles, with either Amsterdam and Rotterdam or Liverpool and Bremen as final ports.

In Asia direct communications are maintained with Calcutta, Hongkong, Shanghai and Yokohama or Osaka. Steamers calling at Sydney and Melbourne keep up the connection with Australia. Besides which tramps find a vast and remunerative field of operation throughout the Archipelago.

The total capacity of steamers running between the mother-country and her colonies and foreign countries previous to the European war, amounted to 1.339.512 register tons net, of which 574.960 tons were occupied by the regular services to Europe.

Except for coasting, foreign ships are admitted to the traffic with foreign countries on the same conditions as the Dutch, having free entrance to harbours that are open to import and export, to which are reckoned all places of any significance. At Tandjong Priok near Batavia, Tjilatjap on the south coast of Java, at Padang on the west coast of Sumatra, at Makassar on the west coast of Celebes and at Sabang near the northernmost end of Sumatra, sea-going vessels can put into port in direct contact with the shore, whilst all these places afford opportunities to take in coal.

A FEW NOTES ON THE DUTCH WEST INDIES.—Some words remain to be said on the Dutch colonies in the West Indies, though the latter are hardly to be compared in significance with our colonial possessions in the East Indies.

Are the West Indian colonies at all significant to Holland?

In the past they were of considerable importance, at present this importance has much declined, but in future they bid fair to become of greater importance to the mother-country than ever.

In fact we could not but smile at the hoax in a foreign newspaper, a badly inefficient translator or a geographically inefficient correspondent must have confused the Danish Antilles, when they were sold, with the Dutch Antilles, which are not far away from them. It is absurd that the Dutch should ever have thought of relinquishing their colonial possessions in South America.

It is true, the results of colonisation are less favourable than of old and attempts made by the Government and private individuals to restore the West Indies to their former greatness have often failed. Yet it is obvious that, when the Panama Canal shall prove to answer its purpose altogether, the complete re-adjustment of the world's traffic will be of utmost consequence to Holland's possession in the West Indies.

For administrative purposes these colonies are distinguished into two parts: the Government of Surinam, comprising the continental possession, and that of Curacao and dependencies, embracing the islands. The former division lies intermediate between Cayenne, belonging to France, on the one hand, and the British possession of Berbice on the other hand, these three colonies of different nationalities forming together the vast territory of what is known as Guiana. Two immensely wide streams, viz. the Maroni and the Corentyn, rising on the southern mountain ranges of Guiana, which form the line of demarcation with Brazil, constitute natural boundaries between the western and eastern neighbours. The island-group numbers 6 small islands, the total surface of which scarcely covers a thirtieth part of the area of the mother-country, which in itself is of extremely limited dimensions. Surinam, on the other hand, is about five

View of the city of Paramaribo, capital of Suriname (Dutch Guiana) from the river Suriname.

A mining camp in the Gold Fields of Surinam (Dutch Guiana).

times as large as the Netherlands. The total population of the Dutch West Indies numbers hardly one hundred and a half thousand souls, only a small percentage of whom are Dutchmen.

Surinam's former prosperity was established by the Dutch West India Company, a sister institution to the East India Company. Owing to the abolition of slave-trade (1862) labour became exceedingly difficult to obtain, as was also the case in many southern states of the North American Republic. Introduction of European labourers to Surinam had no success and, as yet, colonization with the aid of immigrants from Java and British India has not come up to the expectations either. Many of the one time rich plantations have consequently been left uncultivated. In a country the soil of which is extremely fertile, with a climate highly propitious to important cultures, not more than five large *sugar* plantations and about 75 *cocoa* plantations are under cultivation at present. In 1914 the exports of sugar, cocoa and coffee represented a value of little more than 2 million guilders, one million guilders and about 300.000 guilders repectively. Of late years cultivation of *bananas* has been tried, not yielding satisfactory results, however, though there is every hope that this cultivation in Surinam will prove a success in the future. Good results have recently been obtained in the culture of coffee and rice. Also *balata*, a product collected by cutting into trees out of the inexhaustible forests in this tropical country and intermediate in nature between caoutchouc and gutta-percha, has given origin to a steadily growing industry; exports had a value of some 1.700.000 guilders in 1914. Next there is an important world-production of straw hats. Finally I come to the export of *gold*, native to the concessions lying on the rivers Maroni, Surinam and Saramacca, which reached a number of some 750.000 guilders.

The total exports from Curacao came to over 2 million guilders in 1914, straw hats taking a share of 500.000 guilders. The fact that the "Royal Dutch West Indian Mail Service" is extending its services to this colony tends to an increasing prosperity of Curacao.

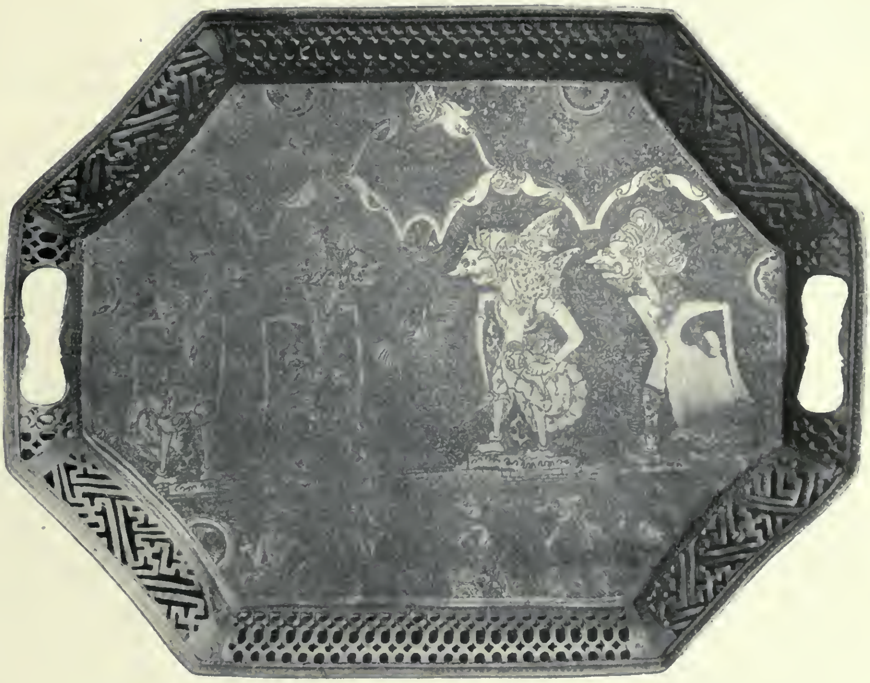
The administration of Surinam is entrusted to a Governor, as the representative of the Queen, assisted by a Board of Administration, whilst the legislative power is vested in the Governor and the Colonial States, the members of which are elected by the "tax-voters". A similar administration is in force in Curacao, with the exception that members of the Colonial Board are nominated by the Board for appointment by the Queen.

As a consequence of the West India Estimates constantly showing considerable deficiencies, the interference of Dutch legislation carries further than would have been the case under normal conditions. So the Estimates are regularly to be submitted to the State's approbation, the latter being entitled to control them whenever the colony has to appeal to the treasury of the mother-country.

This would make us think that Government should be reluctant to concern itself with a possession that is not of much credit to the State. On the contrary. Nothing is omitted to restore the colonies to new life. But even a radical measure to declare the harbour of Willemstad on the island of Curacao, the principal of the Dutch Antilles, a free-port, did not lead to any important improvement.

Now that the projects of De Lesseps to cut through the isthmus of Panama have been carried out, international traffic has been directed to this new route, so that many long circuitous ways may be avoided in future.

A glance at a map of the world will show how extremely significant the West Indian islands are likely to become, not only for Holland's own share in the world's traffic, but also for all those navigating nations who want to make use of this stopping-place, situated as they are close to the Panama Canal and between North and South America.



Tray (specimen of Javanese engraving).

CHAPTER VIII — THE DUTCH ON THE WATER

An historical outline of Dutch navigation. — Development of steam-navigation. — Regular steamers and general carrying-trade. — Our typical inland navigation. — The port of Amsterdam. — The North Sea Canal. — The harbour of Amsterdam. — The Merwede Canal. — The port of Rotterdam. — Rotterdam trade and industries. — The fruits of Dutch technical education in foreign countries.

Historical outline of Dutch navigation. — I may safely take it for granted that readers of this book are acquainted with our history well enough to know that at the time of the restoration of the Netherlands as an independent State in 1813 and of the partial recovery of our colonies a few years after, Dutch navigation was simply in a deplorable state and had to be altogether resuscitated, and this in a country that is considered to have once cradled ship-building.

The foundation of the "Nederlandsche Handelmaatschappij" — which important body has already been discussed, — after the less happy period of the first 25 years of the 19th century, gave a strong impetus to the revival of the Dutch mercantile marine, more particularly as far as the traffic to our East Indian colonies is concerned. In no less degree did the Government lend its aid by stipulating that our colonial produce should be transported to Holland by the said company *in Dutch ships*. However, only a few, if any, ships were then available for this purpose. Consequently, during the first few subsequent years the State resolved to grant bounties for the building of ships. A golden period now followed for the Dutch merchant-fleet,

s.s. "Limburgia" of the Royal Dutch Lloyd.

s.s. "Patria" of the Rotterdam Lloyd.

when it not infrequently happened that after two or three voyages ships had already repaid their cost of building. According to official returns of about 1860, published by the English Board of Trade, the Dutch mercantile marine was then the fourth in the world, coming after England, the United States of North America and France. But this prosperity rested on artificial foundations, and after 1860 the number of shipowning firms was again on the decrease. The stipulation above alluded to having been withdrawn, the conveyance of goods from the Dutch Colonies was open to public tender and foreign shippers entering into competition with the Dutch owners, the latter found their previous prosperity greatly declinning.

The application of steam in seafaring ships fortunately brought a change for the better, so that Dutch navigation gradually regained its prosperity in the course of the last century.

But only from the year 1870 or thereabouts do we notice the real rise of Dutch steam navigation. One of the reasons for this sluggish progress was the inadequate access to our large ports from the sea. This drawback was done away with by the opening of the New Waterway to Rotterdam in 1872 and of the North Sea Canal to Amsterdam in 1876, to which I shall revert presently in connection with the significance of Amsterdam and Rotterdam as international seaports.

It was especially the opening of the Suez Canal in 1869 that revolutionized our trade to the East Indies, thus contributing immensely to the development of Dutch steam navigation, and resulting in the establishment of some regular steamship services to our colonies, to which reference is made in one of the following sections.

DEVELOPMENT OF STEAM NAVIGATION.— The expansion of the general carrying trade in steamers sailing under the Dutch flag dates only from about 1890, when also the conveyance of wood from The Baltic and the White Sea, previously having been effected chiefly by sailing-vessels, was gradually undertaken by steamers. Before and about that time earnest endeavours were made once more, first at Amsterdam and afterwards at Rotterdam, to obtain a share in the general carrying trade of the world. A number of shipping undertakings were established not longer on the lines of private shipowning firms, but as limited liability companies.

The favourable condition of the freight market in the years from 1895 to 1900 appeared to be of invaluable advantage to these undertakings. After 1900, however, freight rates

Tea-room on board the "New Amsterdam" of the Holland America Line.

declined partly on account of the excess of tonnage over cargo offered. The first decade of the twentieth century proved a time of distress to those companies that went in for general carrying trade. But then a change to the better took place, leading to excellent results in the years preceding the great European war. And from what follows it will appear that the Dutch carrying trade, though liable to great fluctuations, was also kept up very well during the first few years of the war.

In spite of the decline noticeable in the years from 1900 to 1910, the number of steamers employed in the general carrying trade increased to a considerable extent. Whereas in 1899 these steamers numbered only 26 out of a total number of 285 steamers,—leaving aside these engaged in East Indian trade, an aggregate of 144 was attained before ten years had passed by, out of a total number of 427 Dutch steamers, including however, steamers sailing to the Dutch Indies.

The following statement gives an idea of the development of Dutch steam navigation during the last fifty years:

1860	1870	1880	1890	1900	1909	1914
38	46	79	128	193	347	427

Regular steamers and the tramp trade.— Our navigation in general comprises the service of those steamers *that ply between fixed places* and of those *that carry on a promiscuous trade, conveying cargoes for all parts of the world.*

Shipowning companies not only exist in Amsterdam and Rotterdam, the two principal ports and commercial cities, but there are also a number of shipowners established at the Hague, Flushing, Harlingen, Terneuzen, Kampen, Groninguen and Delfzijl.

Without entering into too much detail, I want to illustrate the importance and bulk of this source of national wealth with a few figures from before the war.

	REGULAR SERVICES.				GENERAL TRAMP TRADE.			
	Shipowning companies.	Ships.	Gross register Tons.	Ships in building.	Ship-owning compa-nies.	Ships.	Gross register Tons.	Ships in building.
Amsterdam	8	210	559.977	26	3	18	33.327	—
Rotterdam	9	63	329.601	3	22	103	248.939	4
Other places	4	10	16.905	—	5	23	51.265	—
In all	21	283	906.483	29	30	144	333.531	4

Some 50 shipowning companies are at present engaged in the *Ocean shipping trade*, disposing over a total number of 500 seagoing vessels. The capacity of these ships taken collectively may be roughly estimated at 1.250.000 gross register tons, but of course these figures are constantly liable to fluctuations. Of the total burthen about 75 % is taken up in the service of the regular steamers, the rest being employed in the general carrying trade.

In the *coast shipping trade* about the same number of craft is used, chiefly being "tjalks" (blunt-bowed, lee-boarded trading sloops), but also comprising "klippers" (clippers) "aakschepen" (very long, flat and high-bowed Rhine vessels) and schooners, as well as smaller steamboats, motorboats and tug-boats.

A big ship-yard in Amsterdam.

The regular steamer services (21 shipowning companies) may be divided into those companies which convey goods only and those which also go in for carrying passengers and the mail. As a special group may be considered these lines which, — though mainly practising carrying trade, — convey a limited number of passengers as well.

There are two companies that entertain a communication with the East Indian colonies. Then our country is connected with North America, with the West Indies, with European ports in The Baltic, the Mediterranean and the Black Sea, and with South America, by one company for each of these services respectively. Two companies carry on their trade in the East Indian Archipelago itself. The other thirteen companies maintain a regular service with English, French, Spanish and German ports, in normal circumstances.

Thirty shipping companies are engaged in *the tramp trade,* transporting petroleum, coal, wood, ore and further all possible kinds of piece-goods. Two shipowning companies exclusively convey petroleum and other products connected with it in their tanksteamers and tank-lighters; one company disposes over some vessels for the carrying of petroleum in addition to its ordinary tramps and has also tankers at its disposal; two shipowning companies undertake the carrying of coal almost exclusively and another company charges itself only with the conveyance of ore and coal. Some five shipowning companies transport cargoes only to North and South America, to Asia and in Europe. The rest mainly undertake the conveyance of wood, namely during the season when the ports on the Baltic and the White Sea are not ice-bound.

The importance of the Dutch merchant marine as providing a means of subsistence for the Dutch nation is evident from the number of hands employed on this large fleet. In normal conditions the total crews number about 20.000 hands, two thirds of whom are Europeans, one third consisting of Asiatics. The latter are for the greater part in the service of the companies established in the East and only a small number is engaged by the two large companies sailing between the mother-country and the East Indian Archipelago. We must also not forget that, at least in normal times, more than 20.000 sailors make a living in our sea fishing industry and that more than 22.000 bargees and their men earn a livelihood in our flourishing inland navigation. So we see that more than one per cent of the total population earn their daily bread on the water. Considering, however, the number of people either directly or indirectly concerned in Dutch navigation, we come to a far higher figure still.

OUR TYPICAL INLAND NAVIGATION.— Of all the characteristic points forming a theme of discussion in this book, there is perhaps not one so specifically Dutch as our national inland shipping.

In fact, our flat country is ideally suitable for this sort of traffic, provided as it is with an extensive network of larger and smaller canals, rivers, dikes and ditches.

The Dutch inland navigation trade has been pursued from times immemorial. Even before the beginning of the Christian era there seems to have been a strongly felt want of some proper water-ways, for the sake of carrying on a certain shipping trade. As early as some ten years B.C. the Roman commander Claudius Drusus had a canal constructed for the connection of the Rhine with the Ysel. Though this canal is no longer in use as an artificial water-way, a few old remnants, worth seeing, are still to be found close to the confluence of the Ysel and the Rhine and near the townlet of Doesburg. The canal of Corbulo, near the town of Leyden, cut at that same time to satisfy the want of suitable water-ways, affords a second proof of the development of internal shipping at the beginning of the Christian era. This canal is still extant in another form as the "Leidsche Vliet" (Leyden Brook).

The history of our inland shipping trade tells us that the traffic along the inland waters gradually became of heightened importance. In proportion as civilization, commerce and industries advanced in this country, the want of still better, deeper and more extensive artificial water-ways manifested itself.

In the year 1015 Count Dirk III instituted a notorious toll on the shipping traffic, near the town of Dordrecht. The organization of our inland shipping trade was then mighty enough to offer a vigorous opposition to this arbitrary measure of imposing a toll on one of our most important large rivers.

Throughout the ages, until the present day, we notice in Holland a steady increase both of the number of natural water-ways adapted to navigation, and of the number of artificial water-ways. The realm of inland shipping has been enormously expanded in comparison with the limited area of this country itself. The steady enlargement of the number of water-ways has gone hand in hand with a regular development of our internal navigation trade.

In the latter half of the nineteenth century enterprise to open new lines of communication for inland navigation began to languish considerably. It was namely railway traffic that was then gaining ground, and it was generally assumed, especially by the owners themselves, that the inland navigation trade was doomed.

Time has taught us, however, that railway traffic may contribute to the general welfare just as well as navigation, but that for the carrying of a great many classes of goods ships are the most appropriate means of conveyance. That this is really the case appears from the enormous expansion of the inland navigation traffic.

Those among foreigners who have always been anxious to discover the peculiar and typical features of the Dutch country and the Dutch nation, must not expect to find the old market-boats and the former canal barges drawn by horses, any longer. The portly Hollanders of old, puffing all the time at their Gouda clay pipes, with spittoons on their tables, the

Discharging and loading cargo in the port of Amsterdam.

ladies having a sniff at the scent-boxes and passing them round such a characteristic, old-national company, sitting together in the low deck-house and pronouncing the night-boat from Amsterdam to Gouda to be the quietest and pleasantest means of conveyance, — all this belongs to the past.

The unwieldy boats of the Zuyder Zee skippers, which used to keep up service for passengers from the provinces of Friesland and Overysel to Amsterdam, have been superseded by steamers and railways. The transport of goods in the old-fashioned cargo-boats is still carried on. Thanks to altered circumstances, improvement of water-ways and vessels employed in inland navigation, greater speed shown by these vessels, in addition to the lower quotations for freight, this important sort of smaller trade has not only kept its place, but has now attained a state of lasting prosperity. Hence our inland navigation must be considered as a not inconsiderable means of national subsistence.

THE PORT OF AMSTERDAM.— The rise of Amsterdam in the 17th century was promoted by such exceptionally propitious circumstances, that it would not do to draw comparisons with the past when considering the present. Amsterdam's greatness undoubtedly justified the founders of the stately townhall on the "Dam" at Amsterdam, which building is looked upon as the "eighth" world-wonder, — to express the glory of their native city in the symbols of "prince of the sea" and of "bride of the world's commerce".

It need hardly be pointed out that when Holland's golden age was over, — in which time Amsterdam was the principal town, not only of the mighty Dutch Republic, but of all the world, both as a commercial centre and as a seaport, — a period of decline set in as a matter of course. Nor need it be repeated here that Amsterdam as a seaport and commercial centre sank to its lowest level during the rule of Napoleon I.

In the subsequent reign of king William I of Orange everything was done towards improving communications according to the requirements of the time. Thus the large North Holland Ship Canal, which was completed in 1825, enabled the bulky East India men to reach the Y before Amsterdam in uninterrupted transit. In the long run, however, this costly waterway did not come up to the expectations; the duration of the journey, the limited dimensions of the canal and of the locks, the roundabout and curved way, all this rendered it necessary to contrive a better and direct way to the sea, if the town of Amsterdam was to regain its fame as a commercial town and seaport.

The result was the digging through of "Holland at its narrowest" almost simultaneously with the cutting across the Hook of Holland, by which Rotterdam, the other important commercial city of Holland, was provided with an excellent and direct communication with the sea. The opening of the North Sea Canal from Amsterdam to Ymuiden on the North Sea coast took place on the 1st of November 1876.

The historical development of the North Sea Canal, which originally satisfied rather modest requirements only, and of the works established at Ymuiden and Amsterdam in connection with this maritime water-way, is an evident proof of the energy and the insight with which the following generations, continuing the work of the founders, have improved and perfected this important canal.

THE NORTH SEA CANAL.— Here follows a short description of this waterway and its principal works.

The outer harbour at Ymuiden is formed by two massive breakwaters of concrete, each having a length of more than 1½ kilometers, which enclose a water area of 250 acres and extend

The Hem-Bridge across the North Sea Canal.
(The largest swing bridge of Europe).

into the sea till a sufficient depth is reached. A wide channel, enabling seagoing vessels with the greatest draught that is allowed on the canal, to enter the harbour even at low water, is constantly maintained both in the harbour itself and beyond the entrance to it. Two lighthouses with lights of the first magnitude, built on the dunes in the elongation of the harbours, indicate to a large distance at the sea the direction of the harbour-entrance, which is perpendicular to the coastline, i.e. in a NNW. line. Between two low moles of fascine work and stone the outer canal is led from the outer harbour to the locks. The canal runs to the old locks almost in a bee-line, the canal leading to the new lock bends to the north. At the point of separation of the two entrance canals the bed has been widened so as to form a suitable turning-place for deep-draught ships. On the south-side the fishing-harbour opens into the outer canal, at all times capable of allowing an entrance to ships that have a draught of 13 feet.

Since its opening in 1896 this fishing-harbour has developed into the principal of all on the continent of Europe. On account of its favourable situation, its safe entrance even in bad weather, its communications with an important hinterland, this fishing-harbour bids fair to continue to increase in importance. During the first year already as many as 10654 ships entered, while the total value of fish sold in the fish-market amounted to more than 4½ million gulden, this fish being partially intended for foreign countries and daily transported in a fresh state by rail. From olden times down to the present day our fisheries have ever constituted one of the principal sources of income for the Netherlands.

West of the fishing-harbour the salvage-harbour is found.

Three ship locks and one discharging-sluice separate the water of the North Sea from the canal proper. The importance of the North Sea locks as a dam may appear from the fact that in stormy weather the seawater is apt to rise more than 13 feet above the level of the water in the canal. If the lock-gates were to give way the reclaimed grounds in the Y before Amsterdam would be a prey to inundation and in case of incessant storms the richest part of North and South Holland might be exposed to danger, to say nothing of Amsterdam itself.

At the time of the opening (1896) the dimensions of the large lock at Ymuiden were not surpassed by any other in the world, and even though the Kaiserschleuse at Bremerhaven has a larger width, still this lock is inferior to that at Ymuiden as far as length of the lock and depth of the sill below high water are concerned. As a matter of course all this is entirely worked by electricity.

A new lock is being built and this will be the greatest lock in existence: long 400 meters, wide 45 meters, deep 11,5 meters.

Within the locks the canal forms a whole with the Amsterdam docks, the ordinary water the ordinary water level of which is situated only a little above the ordinary level of the North Sea at low water. The distance from the large lock to the petroleum-dock, the first basin of the Amsterdam harbour proper and consequently most western of the Amsterdam docks, amounts to nearly 19 kilometers, calculated along the axis of the canal.

The Shipping House (Scheepvaarthuis) at Amsterdam. In this striking building several of the chief shipping companies have their offices.

The North Sea Canal is State property and the canal works are kept in repair and served by the State, with the exception of the two railway-bridges, which are maintained and served by the "Nederlandsche Spoorwegen" (Netherlands Railways). Police regulations laid down by Royal Decree have been enacted for the use of the canal and its works.

The maximum dimensions of the vessels that are admitted to the canal at present, are as follows: length 220 meters, width 24 meters, draught 9.20 meters.

Passage through the canal is quite free; no dues are levied for the use of the canal, nor of its harbours or artificial works; this also holds good for the fishing-harbour. One per cent is charged, however, on the proceeds of the fish sold in the fish-market, to defray the cost borne by the State.

For the passage from and to the sea and on the canal, seagoing vessels have to make use

A grain silo at Amsterdam.

of pilots. Pilotstations, which are Stateinstitutions, are established at Ymuiden, Zaandam and Amsterdam. The towing-service is carried on by private companies. A sufficient number of strongly built sea tugboats are constantly lying ready at Ymuiden, to render their services whenever necessary. All things considered we may say, that the capital of Holland has an excellent communication with the North Sea at its disposal, since the latest improvements of the canal works have been completed, which works will be entirely modernized in a few years time, when also the considerable extension of the Amsterdam docks, known as "West" will be finished. The canal has larger dimensions than any other maritime ship canal and is accessible from the North Sea at any time, also at low water; it is wide enough for the largest vessels to pass each other freely and is only at two places spanned by bridges, which, however, occasion hardly any trouble to navigation, owing to their extensive width; the fairway of the canal is sufficiently lighted at night and the canal is navigable in summer just as well as in winter; moreover it is provided with a well equipped pilotage and towing-service,—and last but not least—it is free of charges.

THE AMSTERDAM HARBOUR.—The Amsterdam harbour, as it presents itself at present, is properly a creation dating from the last 40 years. What reminds us of a former period are the Eastern Dock, the Western Dock and the Old Bonded-Warehouse Dock, but in consequence of the construction of the high railway-embankment, which was decided upon in the year 1869, these docks have been all but shut off the large shipping traffic.

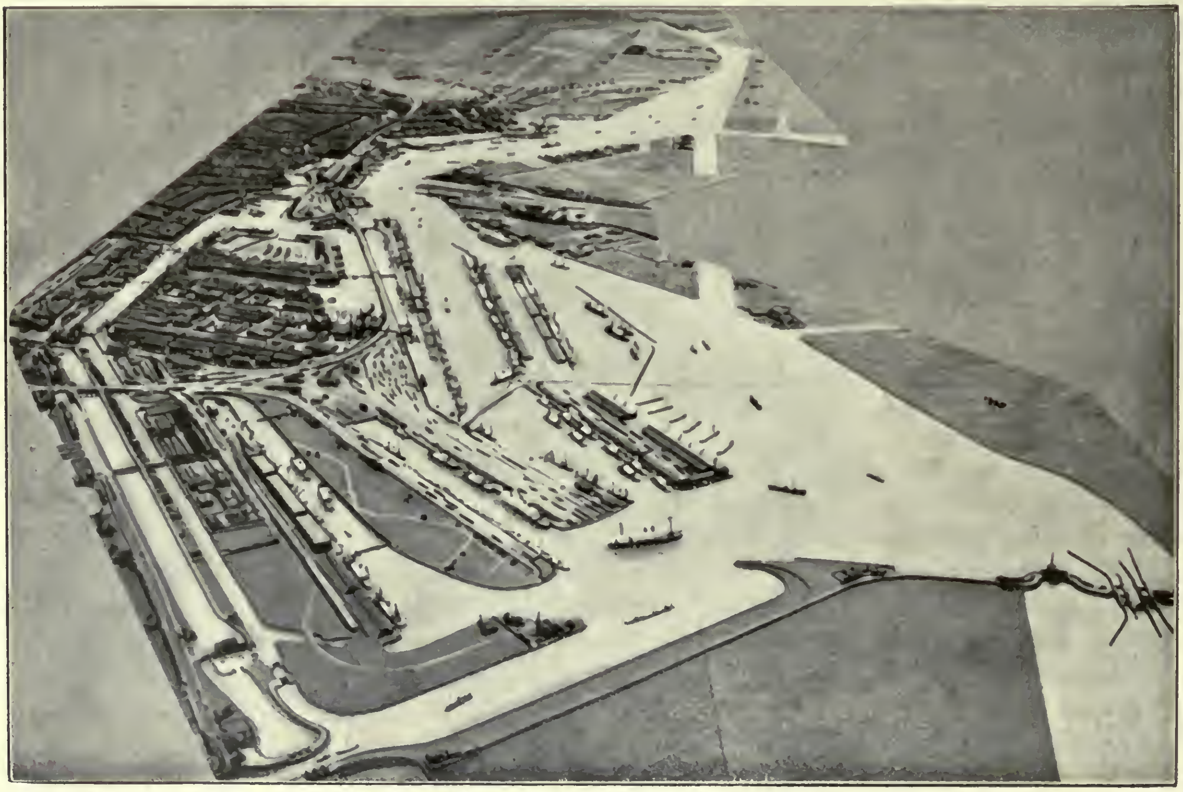
Suppose we stand at the opposite side of the town, i.e. on the northern bank of the wide stream of the Y, at its junction with the North Holland Canal we may perceive in front of us a complex of docks of 8½ kilometers long, the surface of harbour basins available for sea shipping measuring about 538 acres. The Petroleum Dock is the extreme basin in the west and close to it is the western timber dock; there we also find the grounds intended for the construction of the new harbour "West", the preparatory works of which have already been started. At the eastern extremity the Municipal Bonded Warehouse is established. In the middle rises the huge bulk of the Central Railway Station, the junction of the two large railway companies, which are now working together on a mutual plan, maintaining a service for the traffic to the capital from all parts of the country.

On this harbour frontage rise the various buildings of the larger and smaller Amsterdam shipowning companies, the numerous quays and wharfs, as well as the extensive structures of the "Veemen" (warehouse companies), which have their several warehouses along the canals in the town itself. These warehouse companies, — old guilds, taking their origin in Amsterdam, — make it their business to let out space in warehouses, and act as forwarding agents. These private warehouses are partly employed as bonded warehouses for goods for which negotiable warrants are issued.

Whereas the ocean shipping traffic, also comprising most of the regular services between Amsterdam and European harbours, the colonies and South America, is concentrated in the eastern part of the Amsterdam harbour, the western part is assigned to the respective docks for timber, grain, seeds and petroleum. The indispensable complement of a well-appointed harbour, viz. the establishments for keeping ships in a seaworthy state, for making meteorological observations and for the controlling of navigation instruments, is to be found in the very centre of the harbour.

THE MERWEDE CANAL.— Apart from large shipping traffic and railway lines which regularly convey goods to and from Amsterdam to an average amount of two million tons, our inland navigation, carried on along a considerable number of waterways to various parts of the country, is of vital concern to the capital of Holland. It is due to its many markets, goods-exchange, wood-exchange and corn-exchange, its many banks and establishments for the giving of credit, that Amsterdam has on a large scale become the centre of commerce for business people from the provinces, inasmuch as the latter come up to this city on fixed weekdays, to exchange orders and to settle business affairs.

The traffic by water to the northern and eastern provinces is maintained along the Zuyder Zee. The importance of this traffic is revealed by the fact, that in the last favourable years some



Bird's eye view of the Amsterdam docks.

The Maas harbour at Rotterdam.

75.000 vessels passed through the Amsterdam locks on the Zuyder Zee, called the "Oranje Sluizen" (Orange Locks). The principal communication with the south of the country and with Germany is formed by the Merwede Canal, completed in the year 1892. The increasing need of a waterway navigable for the largest Rhine vessels, which manifested itself after the North Sea Canal had been constructed, gave rise to the foundation of this canal, the cost of construction of which amounted to 20 million gulden. At Gorinchem the Merwede Canal unites with the large natural waterway leading to Germany, whilst the Y before Amsterdam connects the canal with the North Sea Canal, which thus constitutes a direct communication with the North Sea. The Merwede Canal measures 71 kilometers. Not any canal, bridge or lock dues are charged; from the very outset passage has been left entirely free. Not even harbour dues are levied on Rhine vessels that, coming from Germany, return to that country within one month. Consequently, the maritime harbour of Amsterdam is, without any charges, at the disposal of Rhine navigation for the sake of transit-trade.

THE PORT OF ROTTERDAM.— What has been observed on the rise and nature of the port of Amsterdam is also to a large extent applicable to the other important Dutch port, viz. that of Rotterdam. Hence I need not enlarge upon the latter, but may confine myself to pointing at some notable differences between the two ports. I should not omit, however, to accentuate the considerable importance of the Rotterdam harbour with respect to some other points of vital importance to our country and its general welfare.

As to the history of the port of Rotterdam the following may be observed. The period of brisk prosperity in the 16th and 17th centuries was succeeded by a hard and difficult time during the 18th century. After the Netherlands had been declared independent in 1813, a revival set in again, but owing to the harbour-basins becoming shallower, and what is worse, the access to the sea being insufficient, shipping traffic was rendered extremely difficult. The construction of the canal of Voorne between 1820 and 1827 brought only a slight change for the better; the passage from the sea to Rotterdam frequently took as many as eight days and nights.

When steam-ships and railways came into vogue this state of things was entirely revolutionized. Traffic by land and by water was not only made easier and more rapid, but new harbour-docks and wharves were becoming urgently necessary for the port of Rotterdam.

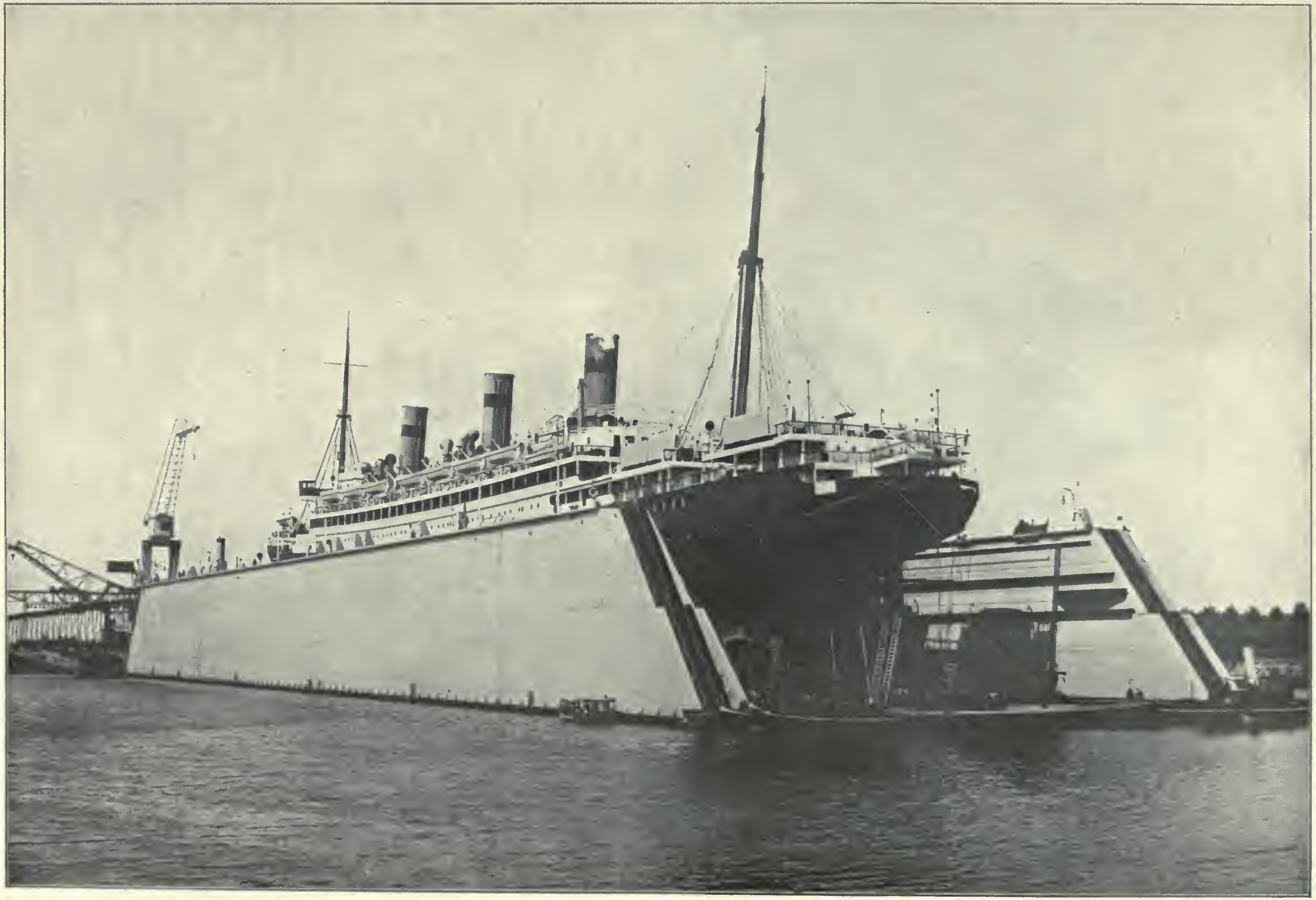
The Act of Parliament of 1863, which provided Amsterdam with the North Sea Canal, at the same time supplied Rotterdam with the New Waterway along the New Meuse, the Hook of Holland being cut across for the purpose, which place was intended as an outport for Rotterdam. Originally it was assumed that the outlay would not exceed six million gulden and that in the course of six years a continuous depth of 23 feet at high water might be ensured. But this turned out to be a sore miscalculation. In 1880 the works of the Waterway had already demanded an amount of 15 million gulden, while the work had been stopped for some length of time, but shortly afterwards the activities were vigorously resumed again. An excellent canal was thus acquired with a width of at least one hundred meters and a continuous depth of 27 feet below the water-level at low water or 32 feet below the water-level at high water, the fairway having a depth of about 28 feet at low water. The outlay for the construction of the Waterway works has required from 40 to 50 million gulden. A State Commission has been instituted, directed by Professor H. G. v. d. Sande Bakhuyzen, to regulate the water-level of the New-Waterway, with a view to securing a minimum-depth of 33 ft. at lowest water.

In accordance with these important works, by which an excellent communication with the sea has been established, the Rotterdam harbour works proper have been expanded every year.

The entire area of the harbour on the right hand bank of the Meuse measures about 137 acres, the public quays having a length of 16,8 kilometers; on the left hand bank of the Meuse the surface of the harbour measures about 468 acres, the public quays measuring 22,7 kilometers, making a total area of 605 acres and a total length of public quays of 39,5 kilometers.

The use of the most suitable mechanical implements for these considerable docks has, especially of late years, been a point of great consideration both on the part of the Government and by private persons. Rotterdam has proved to be fully aware of the fact that, if forwarding agents are to make the transit of the huge quantities of wholesale goods that they handle remunerative at all, it is not sufficient to have good waterways to the sea and to the interior of the country. Care should be taken that sea-going vessels may be unloaded as quickly as possible and that a cargo be secured for their voyage back,

St. Job warehouse at Rotterdam.



View of the floating dock at Wilton's Engineering and Slipway Co. This dock is the largest on the continent; its liftingpower exceeds 46000 tons. The dimensions are: length: 694 ft.; outside width: 168 ft.; height of sidewalls above pontoons: 49 ft.

so that they may put to sea again without delay and without it being necessary to set sail in ballast.

Upwards of 100 cranes, for the greater part owned by the municipality of Rotterdam, are available on shore as hoisting apparatus for transferring goods from vessels into wagons and the other way round; the lifting power varies between 1500 and 30000 kilos. Since 1890 the electric crane is a special feature of the Rotterdam harbour; in fact Rotterdam was the first port to introduce it.

Of late years floating appliances, having a lifting power that varies from 16 to 125 tons, have come into use more and more. For grain, of which about 4400 million kilograms were imported in 1910, the unloading had formerly to be done by hand; but also in this branch mechanical handling has come into use now. Besides "Jacobsladders" (endless belts) attached to the warehouses or placed in the ships, a considerable number of floating elevators are applied at present, which are capable of handling 180 to 200 tons of corn per hour. The enormous import of grain, exceeding a value of 300 million gulden in normal years, has thus been furthered on a prodigious scale. The use of large silo structures and appliances for mechanical sewing of sacks ensued from this increasing import. On behalf of the transport of coal, numbering from 1400 to 1500 million kilos in normal years, tips are found to unload railway wagons in a minimum of time, whilst on the river Meuse floating steam-cranes with automatic grabbers, elevators and other appliances are constantly ready for use.

The modern requirements of shipbuilding naturally entailed the erection of larger shipbuilding establishments at Rotterdam, just as they did in Amsterdam. At first along the "Noord" only, but later on along the "Dutch Ysel" and in the town of Rotterdam itself a considerable number of dock-yards and docks arose, where the keel was laid of a good many steamers and for the greater part of Rhine vessels.

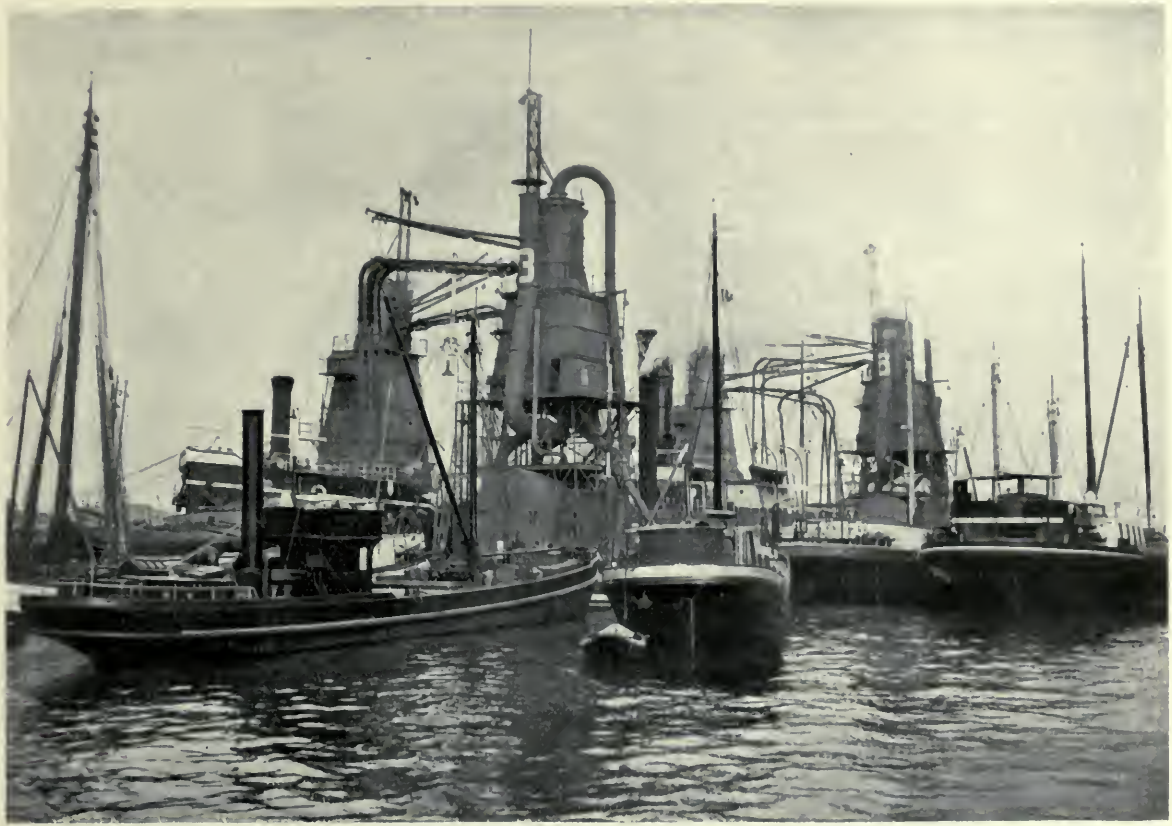
The older docks, numbering three, which belong to the municipality of Rotterdam and are situated in the Dock Harbour, date from some thirty years ago, when private initiative in this respect was still sorely lagging behind. The newer docks fully answer the requirements of the times and have been constructed according to the self-docking system.

Refraining from mentioning figures on the Rotterdam or Amsterdam harbour works at all, I only state in passing, that in the last forty years about 55 million gulden have been expended on the Rotterdam harbour works besides the cost of maintenance.

Now that Rotterdam, both as a commercial and as a seaport town, has expanded its working-area so far, its expenditure has naturally reached amounts so considerable as have never yet been demanded in former years, when its business traffic covered a sphere of a rather limited extent only. Fortunately, the expenses are counterbalanced on the other hand by a considerable increase of the town's revenues.

ROTTERDAM TRADE AND INDUSTRIES.— By the side of its important transit-trade on the water, Rotterdam has in the last decade created a trade of its own, especially in grain, ore, coffee, rice, etc. The import of Brazil coffee, for instance, averaged 70 million kilograms per year until the war broke out. For this article, just like Amsterdam, — and during the last thirty years also for artificial butter, margarine, oil and similar commodities, of which from 6 to 7 million tons of 1000 kilograms were imported before the war broke out — Rotterdam must be considered one of the chief markets in Europe. In the last years preceding the European crisis the import of ore amounted to some 600.000 tons with a value of at least 60 million gulden.

Rotterdam's own trade led to the erection of large storehouses, warehouses and factories,



Grain elevators at Rotterdam.

respectively for the storage and the working up of these important articles. In this respect the warehouse company "Vriesseveem", did pioneer work in 1895 by establishing its premises, called the "Molukken" (The Moluccas) on the Rhine harbour, one of the new harbours. More and larger buildings now followed, the principal being the new shed of the "Holland-Amerika-lijn" (Holland America line), erected in ferro-concrete and established at the Wilhelmina Wharf, with a length of 300 meters and a width of 50 meters, then the "Graansilo-maatschappij" (Corn Silo Company), situated on the harbour south of the Meuse, and the establishment on St. Jobs harbour-basin of the warehouse company "Blauwhoedenveem", which was completed in 1912.

In various respects the grounds along the large harbour basins have proved inappropriate to several industries. In order to enable these industries to have factories near railways and waterways, the "Nassau dock", with a depth of 12 feet, and the "Persoons dock" were constructed at Feyenoord to the east of the bridges, in 1892 and 1901 respectively, and along these harbour basins grounds without quay-walls have successfully been sold for industrial purposes.

The storage and transferring establishments for paraffin-oil and petrol found along the south bank of the Meuse have since 1876 extended to a range of more than 2 kilometers. Like Amsterdam, Rotterdam is now one of the chief harbours for paraffin-oil on the European continent, handling nearly 300 million kilos, against 100 million kilos a few decades ago. Conveyance of these quantities is no longer effected by means of casks, but large and special tankships are employed for the import from America and the Dutch Indies, whilst Rhine tank-vessel, besides tank-trucks, are used for delivery.

In conclusion of this concise description of the Amsterdam and Rotterdam harbours, I should like to suggest to interested foreigners, who come for a visit to our country, not to omit having a close look at the harbour works of these two ports, which are sure to make a lasting impression on any one who has seen them.

The School of Navigation at Rotterdam.

THE FRUITS OF DUTCH TECHNICAL EDUCATION IN FOREIGN COUNTRIES.— There is no branch of education the fruits of which become so widely known abroad as of technical education, particularly of course with respect to water-works.

The profession of engineer is one of the most favourite in this country and the foreign languages taught in our secondary schools afford an opportunity to choose a career abroad.

In fact, more than 30 % of about 2500 certificated pupils of the Technical College at Delft have secured positions abroad.

In all this a national tradition is kept up, for as early as in the great war against Spain in the sixteenth and the seventeenth centuries did the fame of our Dutch engineers as builders of towns, roads, dikes and as constructors of hydraulic works spread all over Europe. In those days France employed almost exclusively Dutch hydraulic engineers whose names have been preserved in the South of France, notably at Bordeaux, where even to-day a certain street is called after the Dutch engineer Conrad Goossens (1625), while in the neighbourhood of Lucon there is still a dike called "La Ceinture des Hollandais"; the Seinedike near Quillebeuf bears the name of "La Digue des Hollandais". But also in England, Germany, Denmark and Sweden have our engineers executed their works in past ages, while even at the end of the seventeenth century one of our hydraulic engineers, Cornelis Meyer, was summoned to Rome by the Pope, in order to make the Tiber more navigable, which work was a great success. Particulars of it may be found described in an Italian book, published in 1696, entitled: "l'Arte di Rendere i Fiumi Navigabili".

In more modern times the names of Dutch engineers were very rarely absent wherever great works were carried out abroad. It was one of our best-known Dutch engineers, Frederik Willem Conrad, technologist to the Department of Waterways, who was invited to act as chairman on the international committee for the investigation of the construction of the Suez-Canal and who later on took a considerable part in the execution of this plan. After his death in 1870 he was succeeded by his namesake and nephew, Jan Conrad; the latter was also a member of the Panama-Canal-Congress in 1879. In South-America the Dutch engineer Jan Waldorp, the projector of the harbours of La Plata and Ensenada gained great reputation, while his three sons have constructed the important ports of Vera Cruz and Montevideo in Uruguay. Even more widely known throughout South America became our engineer Dr. Kraus, who built extensive harbour-works in Chili and who later on, after he had been Rector of the Technical College at Delft and Minister of State, was called to Peru, where he projected new harbours, such as that of Callas.

In Buenos Ayres the names of Mr. Lange and Mr. Doyer and at Santiago that of Mr. Van Mourik Broekman (since professor in Chili) will remain famous as able Dutch engineers. The same holds good for Asia, where two sons of the engineer Waldorp have gained great distinction in building the Anatolian Railway in 1889, and in constructing large irrigation works; one of the Waldorps entered the Turkish Civil Service as Director of Waterworks at Constantinople in 1914. The number of our engineers that distinguished themselves in the Japanese Empire cannot easily be overrated. In more recent times great fame was won by the engineer de Rijks, who improved the harbours of Mikumi, Kobe, Osaka and the course of the river Yedogawa, during the years from 1873 to 1903; later on he gave his technical advice to the improvement of the Whang-po-river near Shanghai, which work was completed in 1905. In Siam a complete staff of Dutch engineers was appointed by the Government for the irrigation-works, while one of them was appointed Director of the Waterworks.

The President of the Technical School at Bangkok is a Dutchman. One of the ex-sheriffs of the city of Amsterdam, Mr. Delprat, acted as adviser to the British Colonial Government in connection with extensive colonial works.

In the above engineering schemes Dutch contractors, too, have often made a name for themselves with their skilled labour. And the dredging machines, sand-dredgers and mud-dredgers, of Dutch manufacture are largely used abroad.

Well known names of contractors in South America are the firms of Ackermans & van

The Bridge across the Moerdijk.

Haaren, Dirks & Dates at Buenos Ayres, who assisted in constructing a number of important harbour-works; extensive dredging works are being executed at Puerto Militar by the "Sociedad Anónima Holandesa de Obras Públicas". In Brazil the first named firm is engaged in constructing piers and in dredging works in the Rio Grande do Sul. In Chili extensive public works are being executed under the direction of the combined Dutch firms of contractors, united under the name of "Dutch Company for the Construction of Works in Armoured Concrete". The name of the first mentioned firm of contractors is also to be met with in France in connection with the extensive dredging works in the harbours of Calais, Bordeaux and Le Havre, where the gigantic floating dredging machines of the Dutch firm van Hattum and Kalis are being employed. In Spain and Portugal there are again a few others of our engineering specialists, viz, the firms of Volker & Bos, Bos & Heyblom and Kalis. In England Dutch firms have been engaged on the harbour-works of Jersey, Dublin, Grangemouth, Avonmouth, Immingham, Newport, Kirkcaldy, Swansea, Wick, Belfast and Port Talbot. In Germany our Dutch contractors founded German companies, in order to be able to carry out their contract in compliance with the German law. Behind the "Hanseatische Baugesellschaft" the names of Volker, Bos, Ficke & Co., are found in connection with a number of important contracts at the Weser and the Elbe for the improvement of the harbours of Bremen and Hamburg, and at Emden and Heligoland; the "Kölnische Tiefbaugesellschaft" has as directors the Dutchmen Ten Bokkel Huinink and Schumacher; besides several large contracts were executed for the German Government by the Dutch firms of Volker, van Hattum, van de Velde, Kalis; for the digging of the Kaiser Wilhelm Canal, the Dutch firm of van Seters, Bennink & Smulders executed an important part of the underground-work, while on the subsequent widening of this canal five large Dutch firms of contractors were engaged.

Also in Russia as well as in Sweden and Denmark, Dutch contractors still play an important part in the carrying out of extensive harbour-works under the control of Dutch engineers, as used to be the case some centuries ago. In Africa, in Egypt, at the Delagoa-Bay, on the river Congo, also in China and many other countries, Dutch engineers enjoy a high reputation, to say nothing of the enormous operations continually going on in our own colonies, as well in the East as in the West Indies, sometimes under the supervision of our own Government officials, often under the survey of our excellently equipped Dutch hydraulic engineers and contractors.

I feel that I have trodden a purely technical ground, which I only did hesitatingly, as this book, being necessarily a short one, does not leave much room for such subjects. Yet I have thought it proper to insert these notes in the present chapter, treating of our present-day navigation, as I take it to be a glorious sign for the vitality of a small nation when important groups in it show so much energy and generally recognized proficiency, and succeed so well in causing the name of their country to be appraised far beyond its boundaries.

May the following chapter bear further witness of this!

CHAPTER IX — INDUSTRIAL HOLLAND

The testimony of a foreigner. — An omelet without eggs. A review of our great industries. — Our mining industry and the ancient fens. — Stone from the catacombs of Limburg. — The land of "long" and "short" lumps of peat. — Minerals and metals, engineering. — Shipbuilding in Holland. — Other branches of metal industry. — Flour and flour products. — Chemical and tar products, dyes. — Oils and fats. — Timber, wooden wares and furniture. — Hides, skins, leather and leather goods. — Textiles and stuffs, yarns, string, clothes — Earthenware and pottery, brick and stone. — Glass and paper. — Edibles and beverages, tobacco. — Precious metals and diamonds. — New methods when the world resumes a normal course. — Some pages on economical geography.

THE TESTIMONY OF A FOREIGNER.— A periodical has appeared since the War, partly as a result of the War even, here and in Paris, called "Le Monde Nouveau", to which are attached several well known names in international affairs, whose object it is to bring about closer relations and a better understanding between England and France on the one side and Holland on the other. In the December number of 1920 there was an interesting article by an authority on economics, J. Ellis Barker. In this article the writer gives a sketch of our country at the present day, with a view to the near and more distant future. The article is entitled: "Holland, — its position and future". and it contains a passage to which we wish to draw special attention. It runs as follows:

"The Dutch are a race of extraordinary talent. The Netherlands have been like another Greece to Europe and Dutch genius is as fertile now as it was in the past. A race possessing the virtues of the Dutch is bound to prosper. They have mightily developed their fishing, their merchant marine and their commerce, and the Dutch industries have advanced remarkably during the last few decades. Formerly it was frequently asserted that Holland could not introduce modern manufacturing because she lacked coal, iron and all other most important raw materials of industry. However, lately has been discovered that the huge Rhenish-Westphalian coalfield extends into Holland and that it may be tapped in that country at a considerable depth. At present Belgium produces about seven times as much coal as Holland. However, the time may come when Holland will draw level with Belgium as regards coal production, and the Dutch genius and Dutch skill and diligence will have created manufacturing industries which need not fear comparison with those of their western neighbour."

This is a compliment which almost amounts to a testimonial and is most encouraging. Another learned economist, the Dutch Professor de Vooys, showed by the aid of reliable figures and statistics more than a year ago, that agriculture and cattle raising no longer stand in the first place among the chief sources of the nation's welfare, but that the national industries have taken that position in and through the War, thus making it evident that the great industries of to-day are worthy of our full attention.

AN OMELET WITHOUT EGGS.— The above quoted opinion of a foreigner and the statistics of the Professor appear the more remarkable, as one would think that Holland seemed in no single respect to be a country which would ever succeed industrially. Cattle raising of course in the lush grass of the meadows by the waterside, and agriculture on the fruitful "polders" of sea-clay deposited along the coast and in the river estuaries, yes, these seemed to be the natural sources of life to the population of the low lands by the sea. But industry? And without any natural resources? An omelet without eggs! No indeed, the destiny of this country never seemed to be that it should become an important centre of industry.

But from an economic point of view, it is a mistake to think, that an industry can only prosper when minerals are sufficiently yielded by the native soil. Though to a certain extent such an argument holds good with respect to metallurgy and, in general the industries requiring a great many ores, a country's favourable position on water and railways is, perhaps, of equal consequence to the great majority of industries. This truism explains the possibility of what would else have been out of the question in a country like ours.

We owe it to various propitious and peculiar circumstances that although native minerals seem to be indispensable for a national industry, our country has proved capable of doing without them.

First of all I point to the excellent situation of our country with a view to international traffic, situated as it is on a sea that is a most active scene of shipping, and on the mouths of some of the most important European rivers: the Rhine, the Meuse and the Scheldt. Of no less importance have been the close business relations between the mother-country and its rich East and West Indian colonies, both as producers and as consumers.

Another factor that has largely contributed to the great success in our industrial undertakings is the nature of our national character. In fact, as early as in the time of the Dutch Republic, many industries were at their zenith of prosperity in this country. Even before the Reformation the town of Leyden enjoyed a world-wide reputation for its cloth industry.

At the end of the 17th and in the beginning of the 18th centuries already our highly flourishing silk industry, velvet and paper mills, cloth industry, vast shipbuilding-yards and saw-mills, oil-mills and liqueur-distilleries, characterized the Netherlands as a real industrial country.

Again, it is a mistake to suppose that in our so called "Golden Age" it was trade exclusively on which the nation subsisted.

I must also point to one more peculiarity in the historical development of our industries. Besides the lack of native materials there is another obstacle to be surmounted. Whereas many foreign countries have protected their home industries by high tariffs for imports, Holland has adopted a tariff-system so moderate that our home industries used to have much difficulty in developing on a large scale.

To what level of prosperity our industries have risen, will be shown in the following pages. It is indeed surprising, that so many various industries should have found a flourishing working area in a small country like ours, naturally affording such a limited scope to industrial expansion. A good deal might be said on the causes that led to that industrial development and on the import of the measures taken by the Government in matters of traffic, duties, technical training and social care. However, one cannot go into details about all this and had better proceed to give a description of what industrial Holland really is like.

A REVIEW OF OUR GREAT INDUSTRIES.— It is not easy to give within the compass of a few pages a complete picture of what is understood by the "Great Industries" and it is the more difficult as it constantly seems desirable to show how this or that form of industry was initiated and developed to its present state of welfare. But in this chapter of "Modern Holland" space is limited as in the others, so that interested readers must be left to make a deeper study of these things at those sources of information which they will easily find on enquiry.

We will first classify the various forms of trade and industry in this country into groups, and later on give some striking examples and figures from each group. In the first place however, we give a table of all those products which appear as articles of import or export on our trade balance sheet, the majority of them consisting of raw materials for our industries. For the purpose of this general review we take the figures for the years 1919 and 1920, although these two years, following directly after the War, can scarcely be called normal. These years were not normal in any part of the world.

GROUP A	IMPORT						EXPORT					
	Weight in million kilogr.		Value in million guilders		Average value in guilders per ton		Weight in million kilogr.		Value in million guilders		Average value in guilders per ton	
	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920
I. Animals and animal products	110	108	192	122	1745	1129	386	462	344	375	891	812
II. Vegetable produce	1415	1640	558	603	394	368	1082	1515	231	267	214	176
III. Minerals and metal (not minting material)	6270	7940	514	753	82	95	380	967	53	100	139	103
IV. Flour and flour compounds	253	123	87	49	344	400	36	163	14	45	390	276
V. Chemical products, medicines, paints and dyes	97	177	46	78	474	441	32	60	31	52	969	867
VI. Oil, resin, wax, tar and distillation products	682	719	243	241	356	335	189	191	114	162	603	848
VII. Timber and wood, furniture etc	973	1516	112	237	115	156	76	57	20	16	263	280
VIII. Hides and skins, leather and leather goods	20	24	70	83	3500	3458	24	23	53	58	2208	2521
IX. Yarns, cord and cordwork, textiles and stuffs, clothing	52	73	293	410	5634	5616	27	42	130	223	4815	5310
X. Earthenware, china, pottery	310	666	10	28	32	42	42	83	9	13	214	156
XI. Glass	16	35	8	17	500	486	34	57	14	22	412	386
XII. Paper	33	85	19	60	575	706	150	236	39	70	260	297
XIII. Food commodities and beverages (not included under I, II, IV and VI	416	305	446	229	1072	751	178	221	259	170	1455	769
XIV. Vehicles, vessels and aeroplanes	52	150	44	109	846	727	11	21	12	20	1091	952
XV. Miscellaneous goods	148	248	182	313	1230	1262	81	116	89	109	1099	940
Total	10.848	13.810	2826	3332	260	241	2727	4215	1411	1701	517	404

For the benefit of our foreign readers we add a table of the same things, but classified in the form which is more customary abroad:

GROUP B	IMPORT						EXPORT					
	Weight in million kilogr.		Value in million guilders		Average value in guilders per ton		Weight in million kilogr.		Value in million guilders		Average value in guilders per ton	
	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920
I. Living animals	0.8	7	1.5	5	1875	914	17	15	26	21	1530	1400
II. Food for man and beast	1512	1554	692	561	458	361	1336	1723	563	628	421	365
III. Raw or half made materials (animal, vegetable and mineral)	7330	9398	1219	1415	3467	2242	731	1445	282	291	2467	1903
IV. Manufactures	1909	2830	911	1348	458	476	605	974	518	734	856	753
V. Gold and silver (minted or not)	0.4	0.1	470	35	—	—	0.4	0.3	320	47	—	—
VI. Other goods	14	21	2	2	143	95	38	59	23	28	605	975
Total	10.848	13.811	3.296	3.367	260	241	2.728	4.215	1.732	1.749	517	404

Without entering into details, we may point out, that imports into Holland have of late steadily increased, while our exports during the last year also grew considerably. These facts point to an important expansion of industry.

Thus we received in 1920 2.962 million kilograms more than in 1919: of this quantity 225 were vegetable products; 1.670 minerals, metals and articles made of those, not named in other groups; 80 chemical products, 543 timber, 356 artificial stone and 100 goods included in XV. We exported 1.408 million kilograms more than the year before: of which 76 more in animals and animal products, 433 in vegetable products (see the preceding chapter on Agriculture and Cattle raising), 587 in minerals, metals etc., 127 in flour, etc., 86 in paper and 43 million kilos in edibles. If we look at the matter from the standpoint of Dutch guilders we come to similar conclusions; — in 1920 a total of 506 million guilders was expended on imports over and above the total for 1919, according to the first table this was divided among vegetable products 45, minerals, metals, etc. 239, chemical products 32, timber 125, yarns, clothing etc. 117, paper 41, vehicles, vessels and aeroplanes 65, other goods 131 million guilders. The import values diminished: animals and animal products 70, flour, etc. 38, edibles 217 million guilders. On the other hand we exported to a value of 290 million guilders more than the year before, namely: 31 in animals and animal products, 36 in vegetable products, 47 in minerals, metals, etc., 31 in flour, etc. 21 in chemical products, 48 in oil, resin, wax, tar, etc., 93 in yarns, clothing etc., 31 in paper and 20 million guilders in other goods. But in edible commodities we exported 89 million guilders less than before, which is to be explained by the change in the entrepôt traffic, which had some influence on other goods as well.

Having treated the subjects of our agriculture and cattle raising in chapter V, we can now leave those industries out of consideration and pass on to the next subject.

OUR MINING INDUSTRY AND THE ANCIENT FENS.—Coal-mining has been yielding important results in Holland during the last few decades; an increased importance is of late years being attached to this occupation, also in connection with our quickly developing national industries.

From olden times coal-mining operations have, on a limited scale, been carried on in the south of Limburg, where at a slight depth a hard sort of coal was discovered. Further prospecting undertaken in the latter half of the 19th century showed however, that coal was to be found in more places of the neighbourhood, with the result that a few concessions were granted. The working of the mines did not get on very well, largely owing to the great technical difficulties presented by the loose and extremely aqueous upper grounds. Only when the so-called freezing-method had been invented, — by which the whole of this aqueous area is artificially frozen with the aid of pipes, driven into the soil until the solid rock at a depth of from 100 to 200 meters is reached, the shaft being sunk in the solid soil thus acquired, — were the mining operations carried on with much better results. The newly discovered coalfields for which no concessions had been granted yet, were appropriated by the State, a State Mining Service being instituted in 1901. The Dutch mining industry has largely profited by the guidance received from the latter.

A few figures will show that Holland has thus been rendered less dependent on foreign countries for the supply of coal. In 1913 the total output came to 1.873.000 tons (of 1000 kilos), which in 1920 has been nearly 4.000.000 tons, i.e. about 100 % more than in 1913. This stupendous expansion within a short period of time is partly due to the fact that the war compelled us to become more independent of foreign supplies.

The annual production of peat, computed in the proportion of pit-coal, works out at 350.000 tons of coal, which number like that of coal itself, is constantly increasing. Hence we get at our disposal a total amount of fuel equal to about 4.100.000 tons of coal.

Modern Delft Earthenware.

The State has also established an exploration service for minerals. This State institution, which has performed excellent work, has proved that coal may be found in a good many places, and that other minerals, particularly salt, may be obtained from the Dutch soil as well. Salt is especially found in Winterswijk in the east of the country. As the salt-layer is very thick and with a view to the possibility of extracting potassium-salt from the soil there, the mining-field is not made too large. Every two or three acres yield enough to supply Holland with salt for years, and a concession-area of about 250 acres is consequently sufficient to provide for several centuries. Moreover, if a good quantity of potassium-salt can really be obtained, it would not be desirable that the whole supply should be in one hand. This would, of course, be no objection if the Government itself should undertake to work the mines.

STONE FROM THE CATACOMBS OF LIMBURG.—A few remarks may suffice upon an occupation that can hardly be considered to belong to the Dutch industries proper, viz. the excavation of Dutch stone-quarries. As a matter of course, these quarries are exclusively found in the more elevated parts of this country, mainly in Mount St. Peter and, close to it, the deep valley of the Geul. These remarkable places are decidedly worth visiting, if only for the historical interest they inspire. We find them repeatedly referred to in old manuscripts.

The workable marl-bed, of an average thickness from 40 to 100 meters, is the deposit of a pre-historic sea. At the end of the Senonic period the chalky sea, — marl is nothing but chalk, — covered our entire country and extended as far as the British Isles. That the Romans used marl for building purposes when they settled in this country appears from the excavated country-houses, which date from the first four centuries of the Christian era. During the French Revolution (1798—1800), when priests were not admitted to church-service, the Limburgers held divine service in the passages of such subterranean marl-pits adapted for the purpose. There was no question of anything like a chapel yet. These refuges were afterwards embellished and ornamented as is still to be seen at Geulhem and Valkenburg.

Nowadays they can no longer be looked upon as real quarries; of late years stones have been dug there from hardly ten pits, the annual output totalling from 3000 to 4000 cubic meters.

Marl-sand is a by-product from the Limburg quarries; it is left after the sawing and polishing of stone-blocks. Being a limy substance it may be used as a mixing material for the improvement of boggy grounds. Marl and lime too are now produced to a larger extent, as import from abroad was much hampered on account of the war. The cement industry has already progessed beyond the initial stage. Hitherto lime had for the most part to be obtained from abroad. Sea shells only have from early times yielded lime, by being burnt in special lime-kilns found along the maritime parts of the country. Valkenburg lime is at present used as a pretty good sort of mortar.

THE LAND OF "LONG" AND "SHORT" LUMPS OF PEAT. — Peat, more than anything else, has long been *the* national fuel in Holland, and is with our people often still the favourite fuel for stoves and kitcheners especially in the northern provinces of the country; it produces a pleasant heat, is very economical in burning and affords a clean and easily storable material. For part of our national industries, too, peat is still used to day. In most occupations, however, our time-honoured peat has been ousted by coal, also for the stoking of engines in the fen districts themselves, such as the northern fen-colonies, which is fortunate. For if the Dutch had continued stoking their engines with nothing but peat, a large part of our country would have disappeared long ago, which would have been too much even for a country that boasts of having made the land after God had made the water.

Yet it is a great advantage that "long peat" which has been cut from elevated lands, has left underlayers, the so-called "dalgronden", that have turned out to be most fertile soils, being eminently adaptable to agriculture and horticulture. A good example of this is found in the province of Groninguen, where peat-cutting has been methodically pursued down from the 16th century. Thus our ancestors made use of peat to expel the cold, whereas at present their descendants indirectly reap the fruits by growing potatoes and cereals on the soil thus acquired. Moreover, the former canals dug for the "fen-colonies", are now perfectly suitable for the conveyance of a good many local industrial products. The length of these canals in the three northern provinces of the country measures as much as 1500 kilometers.

So-called "short peat" is obtained through dredging the low fens, after which vast water-areas are left. This is, of course, only a feature of the low-lying western provinces, in some of which these water-areas are still to be found. Most of them, however, have been drained in course of time. Also in these parts excellent underlayers have been met with; in fact, the peat-industry of the low fens too has not a little contributed to an intensive cultivation.

In our days digging and dredging of peat is still regularly carried on, though on a much smaller scale than heretofore. In the last five years about 7500 acres of "long peat" have been cut, whilst an equal number of acres of underlying soils have been brought under cultivation in that same period. The result of this industry should not be underrated. The annual production aggregates some 1800 million "long" and "short" bricks of peat, representing a value of several million guilders and providing a source of income to some 10.000 families. Of the total output 66 % is yielded by the province of Drenthe.

Peat-mosslitter, — mechanically pressed into bales of 100 kilos, — is manufactured of dry-peat specially suitable for the purpose, called "bolster", which is the upper layer of the peat-moors being too light for the cutting of peat; this litter is used in stables, for covering our bulbfields and for the packing of fruit. When mixed with molasses it even makes an excellent fodder for cattle.

Whereas the fuel is mainly intended for home use, some nine tenths of the by-products are in normal times sent abroad, not only in Europe, but even as far as America, to an amount of 200.000 tons annually.

In connection with the mining industry, alluded to above, which is steadily growing, new possibilities are opening both in the north of the province of Limburg and in the neighbouring province of North Brabant, as well as in the province lying to the north of that, Guelderland. The area of the districts for which concessions have been issued is estimated at about 75.000 acres, and contains hard, semi-hard and bituminous coal and a field near by was discovered through private enterprise, covering some 15.000 acres and containing gas and bituminous coal; while further in northern Limburg there is a district of about 2.500 acres which holds hard and semihard coal. The field in the east of North Brabant is about 40.000 acres in extent and that in Guelderland is estimated at 5.000 acres and is said to contain gas coal, rock salt and potass salt.

One of the developments of this coal mining is the "brikett" making, which is connected with both coal and peat. Then there is coke production and the chemical industry, both of them developing from the gas works, who have obtained possession of the materials from our mines for some years in order to produce gas and to use the by-products for our chemical industry.

All this does not mean, however, that Holland can entirely cover its own needs for household and industrial fuel from its own mines and fens. Especially as regards coal we are obliged to draw from foreign supplies and our industries could not possibly get on without them. We shall return to this subject again.

MINERALS AND METALS, ENGINEERING.— That Holland does not produce ores and metals is a well known fact. If such minerals are to be found here, it is in such small quantities, that they are not worth troubling about.

Metals are found in the earth either as pure metal or as compounds of elements, such as oxygen, sulphur, antimonium, arsenic or chlorates; these compounds form the ores, from which, by a variety of methods — mechanical, chemical or electrolytical — the metal is extracted. Pure metals have not been hitherto discovered in Holland; while of the many known ores, only bog iron ore or iron ore in insignificant amounts have been discovered. Nevertheless an extremely important industry has gradually grown up here, comprising various branches of metal working and the foreign trade in iron and steel has developed largely.

For instance Holland has many engineering plants in their various adaptations such as shipbuilding, tool and implement factories, structural steel factories for building purposes together with copper, brass, lead and zinc mills.

The history of our iron and steel industry, including the chemical and electro-technical groups, dates only from recent years, because raw materials were very hard to obtain. But now we have arrived at the point where efforts for the erection of blasting furnaces at Velsen, on the North Sea Canal near Amsterdam, have almost succeeded.

It was a comparatively long time before the simplest steam engines were made in this country, including steam boilers, and much longer before the home industry began to compete successfully with foreign makers of the same and both home and foreign buyers became convinced, that Dutch engines could be just as good, if not better, than those of English, German or Belgian make. At the end of the last century the old prejudices began to give way and the number of engineering works in this country has much increased in the last thirty years. This number is now estimated to be at least 200 and there are more than 36.000 men employed in the greater works. The number of smaller works employing less than 100 men each is by no means unimportant, especially since electric motor power is being used, owing to the erection of electric power stations in many places. Iron and other metal casting is done in most works, and many of them make structured stell for bridges, roofs and rolling stock of trams and railways. The largest works thus engaged are those which apply themselves specially to supplying articles for our Colonies, such as rubber making and sugar refining machinery and other tools for use in the tropics. The smaller industries in the engineering branch are also successful in producing those iron (or other metal) wares for which we used to have to go abroad. A speciality of this country is the machinery needed for dredging, excavating and pile driving. There are some five and twenty works engaged in this at Amsterdam, Dordrecht, Haarlem, Kinderdyk, Leyden and so on. There are some engineering works in which the Dutch excel above other nations, namely the construction of fixed and movable bridges, docks, lockgates, jetties, viaducts, lighthouses, gasometres, oiltanks, turntables and so on.

The electro-technical industry in this country, as in every other, has seen a rapid development, which is of economic importance as it is being guided by highly trained engineers. They may be divided into two groups, namely, those applying themselves to making electromotors, dynamos, transformers and accumulators, and those who specialize in electric installations for technical, scientific and household purposes.

Our wire and cable works have made a great reputation for themselves abroad, indeed these wares, as well as the lamps, are chiefly made for export. The lamps go to every quarter of the globe and of the millions produced by the 6000 hands at work in North Brabant only 5 per cent are used in Holland itself.

The market for Dutch engineering works is almost unlimited. For example, the Dutch machinery for shifting sand or soil of any kind is used on a large scale abroad also, and orders are received from Governments and communities all over the world, where men are busy making harbours, canals, drainage systems and other public works, and very often our Dutch engineers are employed to execute these undertakings.

In the last thirty years our export has increased in installations for sugar refineries, various types of motors, brick making machinery, iron rollers, cranes, coffee roasters, signalling apparatus for railways and not least in machines used in making margarine. Our factories where motor cars, bicycles and aeroplanes are made seem also to have good prospects before them. Is it known abroad, that in no other country in the world is bicycling so popular as in Holland? The official figures say there are a half million bicycles in use here, that is almost one to every ten inhabitants! But we must be brief. Thus we must not dwell upon the steel casting industry, the growth of our engineering works scattered over the length and breadth of our land.

Shipbuilding in Holland.— In a foregoing chapter attention has been drawn to our great shipping industry. But in this chapter on industry, we must devote a few words to the shipbuilding yards of the present day. And again we have to point to the fact, that the world's industries and the world's traffic are at the present moment in an unbalanced condition.

The years now just behind us, were extremely favourable to our shipbuilding industry, so that our old Dutch slipways seemed to be recovering from their decay and resuming the fame they enjoyed in the seventeenth century.

Until recent years some 80 Dutch ship-yards delivered 298 ships for foreign demand, together with 76 complete engines and 53 boilers, so that in proportion to the total number of ships built, Holland ranks as the second largest supplier of ships in the world. If we take into consideration the building of larger sea-going ships at the same time, Holland appears to have been the fifth principal producer in the world. The exact figures of before the war are as follows: the total

Revolving and derricking cranes in the port of Rotterdam.

production was 2.876 ships with a gross tonnage of 2.268.763 register tons. Holland's share being 354 ships of in all 153.502 tons, in addition to 534 vessels for inland navigation. At the end of 1918 the Dutch fleet had had 113 steamships and 3 motor-boats constructed or ordered, having a capacity of about 212.512 tons gross.

The flourishing state of Holland's neutral navigation until 1918 naturally brought about a large demand for the building of sea-going vessels in this country, whereas a great stagnation caused by the European war conditions, hampered the progress of shipbuilding for inland navigation. Whilst in normal times our inland shipping trade is extended to far beyond the limits of the country, — Belgium, the north of France, the Rhine province and Westphalia, more particularly on the Dordtmund-Eems canal, — the sphere of our internal navigation was restricted to the boundaries of Holland itself, as soon as the war broke out in August 1914. Moreover, a considerable number of vessels that hitherto had regularly sailed on the Rhine, had to compete in the inland shipping market, which had dwindled down owing to the importation of goods having decreased to an enormous extent. The large excess of the supply of tonnage over against the demand made in the inland market, naturally caused orders for the building of new inland shipping craft and Rhine vessels to contrast very unfavourably with those of former years. What was intended for internal navigation in recent years mainly consisted of dredgers, sand-dredgers and decked boats.

On the other hand, our smaller ship-yards found some recompense in the great demand for the building of fishing-boats, comprising large numbers of steam-luggers, motor-luggers and sailing-luggers. Many ship-building firms that had never gone in for the building of these kinds of vessels before the war, now accepted orders for them. Shipbuilding establishments that were furnished with larger working-capital and had hitherto made a speciality of inland shipping craft, extended their yards and adapted them to the construction of smaller sea-going ships.

So we see that the Dutch small shipbuilding trade has been pretty busy since August 1914.

The manufacture of floating dry-docks, mechanical navvies and dredgers, sand-dredgers and floating harbour-implements has become a special feature of the Dutch shipbuilding industry, these products being delivered to foreign harbours all over the world previous to the European crisis. The building of motor-boats is also in a flourishing condition, finding outlets in all possible countries and often charged with orders from foreign Governments. Until recently we vied even with Great Britain in the construction of smaller vessels with explosion-motors. In fact, inland craft with such motors had been built in this country long before they got known in other countries.

Holland is also the maker of passenger and cargo boats used in river-traffic, strong tug-boats of various types, besides the huge Rhine vessels plying between Rotterdam and Mannheim. Dutch ship-yards have also gained a great repute for the building of fast-sailing pleasure paddle-steamers.

Other branches of metal industry.— Besides the above discussed industries, some other branches have been taken up during the last fifty years and are concerned with all kinds of metals. These have not attained the dimensions of those in iron and steel, but still each of them has become of sufficient value to be worth mentioning. Most of these industries are the result of handicrafts which about the middle fo the 19th century comprised no more than working up imported halfmade wares by hand for local markets, and were thus of a more or less primitive type.

The technical knowledge necessary not having made much progress since the abolition of the old Dutch "gilds," although handwork in this particular branch undoubtedly still plays a great part and machinery is only put to a supplementary use as a rule, as is also the case in smith's work whether for factory, ship, shoeing or household purposes, there is a number of articles still made in this country on a larger or smaller scale, such as: simple articles and tools of iron or steel, bedsteads, mattresses, garden furniture, ice-boxes, arms, nails, skates, knives, scissors, tongs, horse-shoes and so forth. These forms of industry, and also that using copper, brass, lead and zinc, tin packing, etc. are to be found all up and down the country. The same may be said of the works where they make safes, fire engines, capsules, printing type, enamelled goods, metres for gas, water and electricity, fire grates and stoves, all kinds of instruments for scientific purposes or music, clocks and timepieces. We think this summary of such industries will suffice here, although it should not be forgotten, that many of these smaller industries are well on the way to become greater ones. So that the English writer quoted at the beginning of this chapter was right when he said: "The Dutch skill and diligence will have created manufacturing industries which need not fear comparison with those of their western neighbour."

Flour and flour products.— The making of flour is almost as old as humanity itself. In the days of old men ground corn to flour by stamping it in a hollowed out block of wood, or mortar, with a stone, then they invented the grinding method between two horizontal mill-stones, strung together on a spill and roughened into grooves, the grain being ground fine by turning the upper mill-stone on the spill on the nether mill-stone which remained still. The application of steam as a motor power made no change in this method, although it caused a great evolution in the industry. The introduction of steam brought about, first in the United States of America, the erection of big steam mills in the beginning of the 19th century, which changed the industry in its character. The old state of affairs remained as it had been in Holland for some time after the other European countries had adopted the changed methods, as long as the excise on milling kept the flour industry from developing. When this tax was removed in 1851 and grain was imported to meet the rising demand, the flour mills adapted themselves to an industry on a large scale and very soon a number of steam flour-mills, mostly of French origin, began to take the place of the old wind and water mills. Between the years 1870 and 1880 smaller or larger flour mills (some eighty in all) were at work in different parts of the country; but then a great change took place in milling technics, the steam driving power being replaced by new machines with iron rollers to take the place of the old mill-stones. This roller crushing process caused a concentration of the industry all over the world. In America especially, gigantic mills were built and began to compete with the prices of the Dutch markets. Later on our home industry recovered itself.

Our corn-trade and the preparing of various kinds of grain have, just like the import trade of corn, been of high importance from an early date. Besides the yields of the country itself, enormous supplies of corn are imported from abroad, which has led to an extremely prosperous cornmarket in the towns of Amsterdam and Rotterdam.

Our present up to date flour mills grind mostly this foreign corn. Of the home grown wheat, the Groninguen grain is almost the only sort ground in these mills. The other home grown wheat, especially the heavy Zealand kind is still ground in the old mills by the flat mill-stones, in the smaller industry, as also is the rye.

The trade in wheat flour is, for various reasons, extremely important for Holland and the same may be said of the by-products, particularly bran. Rye flour, the chief ingredient of our rye bread and one of the ingredients for our spiced cake factories, is produced in special mills and in numbers of smaller concerns. Of the other kinds of flour, we should mention buckwheat flour, used by the working people for pancakes and porridge, while the husks are used for packing bulbs, eggs and so on; then we have also "griesmeel" (semolina) and oatmeal.

In normal circumstances Dutch flour-mills produce about one half of the total home consumption. The home and foreign flour is used for baking our delicious bread in various sorts and forms. Connoisseurs are well acquainted with the delicacies of a Dutch breakfast table, the crisp rolls and sugary currant buns, its various sorts of crumbly Dutch rusks and all thinkable varieties of cake. At least some hundred Dutch towns have a special sort of cake of their own.

Besides bread, Dutch rusk and cake factories, there are a number of large biscuit-factories established in this country, which used to dispose of their palatable products also abroad. Our important vermicelli industry should not be forgotten.

CHEMICAL AND TAR PRODUCTS, DYES.— The branches of industry comprehended under the name of "chemical industries" differ so widely in our country according to the character of the raw materials used, that it will be found we have treated some of them as belonging to other groups, where they seemed to be better placed on account of the finished product and also of the materials used. The chemical cleaning and dye-works, both of them important industries, have been included under textiles and clothing, tanning will be found with the leather industry; benzine and paraffine, and also margarine, glycerine, candle and soap works are in the group of "oils and fats" and among "edible products" will be found the vinegar factories, the distilleries, yeast, sugar and salt.

In this group of chemical products we reckon in the first place: sulphuric acid and its by-products, salt-petre and hydrochloric acid. Other by-products are sulphate of iron and sulphate of copper, used to make ink and Prussian blue, further in making indigo dyes and as a disinfectant, and in some gas works for the purification of cy-anate. The sulphate of copper is also used for galvanic elements, for preserving wood, for "Bordeaux pap" used for sprinkling certain plants, such as potatoes and fruit trees, as a preventive of harmful mildews. Sulphuric acid is much used in modern chemical works, where it serves to make numbers of other acids, after which it is used in refining metals and oils and in making guncotton, in packing for accumulators, the manufacture of glucose and parchmentpaper. Thus it has become an article that, although imported as a raw material, is also exported on an important scale.

Nitric acid is chiefly used in the manufacture of various nitro products, which are brought to pass in our industry connected with the tar dyes and with the explosives; further it is used in making collodium wool, in dissolving metals and an agent for oxydisation in chemical works and laboratoria, as well as in the manufacture of dextrine. As one of the chief components of "Chili-salpetre" it is of no little importance.

General view of an oil-factory at Delft.

Coal gas and its by products supply us with a variety of gaseous substances, whereby a residue is left which consists chiefly of carbon. Some of the gaseous substances on cooling are liquid, others solid, the rest remaining gases. This industry is thus in the first place practised to supply gas for lighting purposes, for heating and for motor power. The by products are: coke, coal-tar, ammoniac or gaswater, and ferruginous earth.

One may remark here, that the use of gas for lighting purposes was an invention of the 18th century and is largely due to the investigations of a Dutchman named Minckelers. At Maastricht, his birthplace, a statue has been erected in his honour. There are now to be counted in Holland some 200 gas works of varying capacity. Although the use of electricity has spread rapidly during the last decades, the capacity of the gasworks, which are nearly all municipal industries, has scarcely diminished at all.

Tar, one of the principal by products of the gasindustry, is distilled, in two of our largest works of this kind, into tar oils, leaving pitch as residue. Pitch is used in making asphalt paper and other roof coverings and as a binding material for briketts. The other products (benzol, toluol, lysol, xylol, naphtaline, phenol, creosote, solvent naphta and pyridine) are used in our dye works and for making antiseptics.

Dyes are divided into two groups, the organic (vegetable and animal) and the anorganic (mineral). The addition of aniline and azodyes to the organic dyes has produced an endless list of such things now at the disposal of the dyeing industry. We may here call to mind in passing the madder and indigo cultivation in connection with dyeing materials. The significance of the dye manufacture in our country, and that of lacquers and varnishes, should not be underestimated, for these chemical works are scattered in almost every part of the country.

Among the general group are included the ink, gum and sealing-wax factories, and then we turn to the flourishing industry making preparations of quinine and various medicines, such as aethylchloride, chloroform, ether, cocaine, pharmaceutical preparations and compressed medicines and antiseptic bandages. Large quantities of these were used during the late War, by our own army and by the armies of all the belligerents.

There are also factories employed in producing etheric oils, synthetic perfumes, natural and artificial fruit essences and so on. We should also include in this group those rising industries occupied with caoutchouc, gutta percha and balata, and also gum, matches and soda. Of less importance perhaps, but indispensable to us as a nation are those factories making gunpowder and fire-works, celluloid, chlorzinc, incandescent gasmantles, rennet, colouring for cheese and butter, carbonic acid gas, magnesia, sugar of milk, nitrogen, hydrogen and oxygen. Then there are the factories which supply the great industries with the ingredients for their work, such as: leather tanning mixtures, sugar of lead, formic acid, saccharine, salts for making artificial "mineral waters" and suchlike.

The industry in artificial manures has of late years extended so tremendously, it deserves special mention. Not only has the use of these fertilizers increased enormously to our own benefit in agriculture, but the trade in mineral manures and their components has grown to redoubtable dimensions.

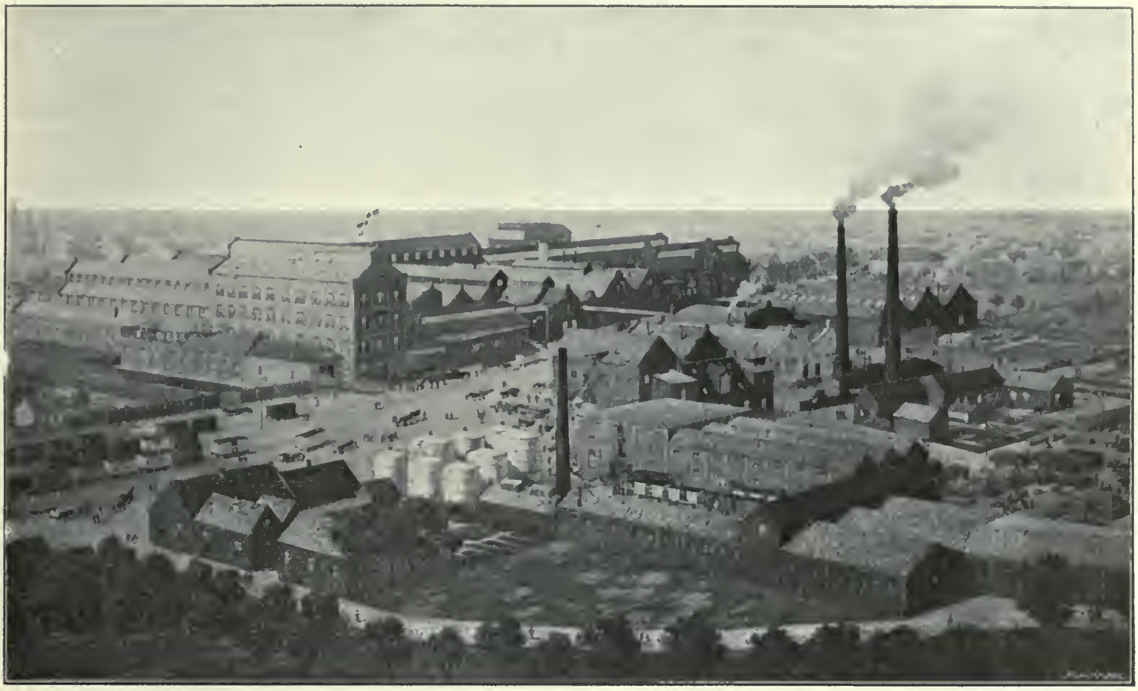
OILS AND FATS.— There is in reality a very close connection between vegetable and animal fats (which are called "fatty oils" when they are in a liquid condition) and the preceding group and also with the group we shall discuss later on as "edible commodities and beverages". Following the grouping in the general table, however, we mention these fats and oils separately, but include with them the aetherial and mineral oils, waxes also forming a separate article of industry.The raw materials for fatty oils and fats are made partly from vegetable sources, such as the fruit and seeds of certain plants, growing in this country, but imported in large quantities from abroad; but also they are made from animal products to which our own cattle stock and foreign imports contribute. The extensive trade of Holland in oil seeds and animal fats date from olden days. The chief fruits and seeds in use in these industries, both for home use and export are: cotton-seed, linseed, hemp-seed, rape-seed, maw-seed, mustard-seed, further earthnuts, soya beans, coprah, palm echinus and kapoc seeds and the fruit of the Chinese tallow-tree. As the chief animal fats we may name: tallow, melted down from the fat of cattle and sheep and chiefly obtained from North and South America ("premier jus"); then oleo-margarine, the hard fat of which is mostly used by our stearine candle factories. Lard is pigs kidney-fat and is imported here under the name of "neutral lard" in large quantities.

All these oils and fats are used for a great variety of purposes, namely: as food, as medicines, for lubricating purposes, in extracting volatile oils, for lighting uses, in soapmaking and glycerine, in candle factories, in dye and varnish works, for printing ink, in the making of certain caoutchouc-surrogates and in dyes for cotton printing.

We have seen what an important factor these fats and oils are in our chemical industries, and in the textile and clothing factories and in the making of linoleum. The centre of the oil industry is still in the old district of the Zaan, although the number of factories there is less than it was; for the rest, the 200 oil factories we may count distributed in most of our provinces.

Special mention should be made of the factories of cattle cakes, as well as our famous candle factories, which even the advance of electric light has not sufficed to extinguish as an old tried, and practical means of artificial light.

Time was when the material yielded by our Dutch cattle helped to constitute this special industry, viz. fat, which was formerly used for various larger and smaller occupations that required this animal substance as the principal constituent for their products. As is also the case with respect to a good many other substances, a great change has been brought about by the application of new chemical methods. In the present day even all the fat supplied by Dutch cattle would not nearly suffice to satisfy the demand made by the manufacture of fat-products.



Bird's eye view of a large margarine-factory at Oss.

The candle-factories of Gouda and Schiedam alone have in the course of time absorbed more fat than our most productive cows could ever have yielded collectively! Dutch candle-factories mainly go in for the manufacture of stearine candles, the traditional tallowcandles having fallen into disuse now. Their average output amounts to not less than about 10 million kilos annually. They also make night-lights, which like candles and stearine used to be sent abroad in large quantities.

Finally, our margarine, one of the oldest and best known substitutes for butter, which was used for the French Army on the initiative of Napoleon III as it supplied a cheap but tasty and nourishing food, the invention of a Frenchman named Mège-Mouriès (1869). The original process was thus: freshly melted beef fat was pressed and separated into hard and soft fat, the latter (oleo-margarine) being used to make the margarine, being churned together with milk and cream and treated further as butter. The hard fat (oleo-stearine) was used for soap and stearine factories.

This industry in Holland has risen to tremendous heights and in the practical application we were in advance of the French.

Leaving aside the abnormal years of the war, the annual production approximated to 60 million kilos some years ago, of which say 10 million kilos at most were consumed in the country itself. It stands to reason that the better classes generally prefer pure butter to any imitation.

Still, people are beginning to see the advantage of having margarine by the side of butter. A number of 30 factories, now operate in this line and work on a tremendous scale to meet the requirements of the present time.

Thus Holland, which naturally ranks among the foremost butter-producing countries of the world, is at the same time the chief supplier of this chemically made product.

TIMBER, WOODEN WARES AND FURNITURE.— The situation of Holland as a wood producing country has been touched on already. But this production is certainly not enough for our industry in timber and wood. The international trade of Holland in wood both for our own needs and to provide for our transit traffic — the Dutch mariners were regarded for centuries as the great timber merchants and carriers of the world! — is of great importance, however, as well as the conversion of wood in many factories into useful articles of commerce.

Timber is in this country classified in two groups: pine-wood and leaf-wood. Then, closely connected with timber, we have such things as osiers, straw and reeds, for various branches of the wood industry.

The chief kinds of wood are: mine props of European timber, the same kinds of wood being used to make mechanical preparations of sawdust (wood-pap or wood) or chemical preparations of the same (cellulose), further European building or carpenter's wood obtained from the central and eastern lands and also from Scandinavia and Finland in a more or less rough condition, all of these being finished to the uses of the builder as needed; osier and hoop woods, peeled or unpeeled; the finer kinds of wood such as erica, coconut, cedar, palm, ebony, mahogany, palisander, teak and pock either rough or partly prepared; the group of American timber, pitch and yellow pine, walnut; then we have wood-pap and flour, sawdust and shavings, straw-pap, all of them damp; and finally railway sleepers and telegraph poles of European wood.

All these are used in Holland as raw material in various industries dating from olden times, when our Zaan district was known far and wide as the place where the wind mills were saw-mills; but these old mills are now supplemented, if not supplanted, by many forms of modern factories.

As chief branches of the wood industry should be mentioned, the application of preservatives to wood, sawing and planing by steam, furniture and cabinet making, wood turning, carriage and cart building (including the bodies of motor-cars), cooperage and casemaking (general specialising), the national clog-making, barrel-hoops and basket making (for the fisheries and fruit farms) and finally brush and broom making.

The first mentioned class is so important because it is due to the rendering of wood impervious to the influences of damp, to its preservation from rot, that we can carry out successfully those extensive works in our water system for which Holland is famous — quays, piers, locks and so on; and seeing our reputation in this respect, our export of prepared timber for railways and water-ways is by no means unimportant. Creosoting, burnetting, kyanising and sulphate of copper treatment are the principal methods employed.

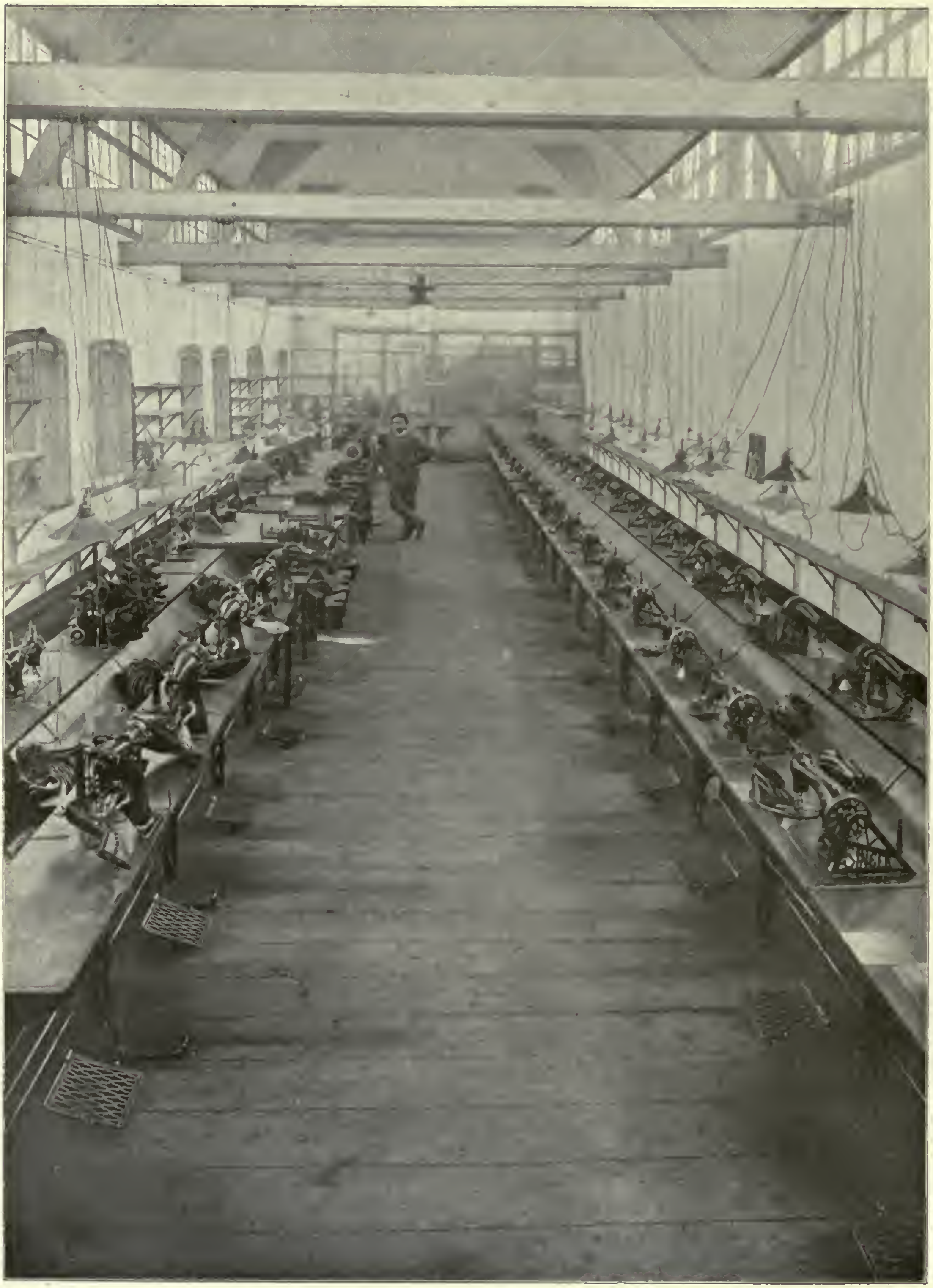
The greater part of our national wood industry however, consists in steam saw and planing mills. Since the year 1596, when the first Dutch saw mill ("Het Juffertje") began its careful work on a raft in the Zaan, just north of Amsterdam, the industry has steadily progressed upwards, until the introduction of steam opened new possibilities. The steam saw mills are to be seen nearly everywhere, there being some 400 of them. Some of them are owned by timber merchants, others simply work for third parties at a payment for the sawing and planing only. Most of these carpentering mills work for local orders, but there are big ones which execute export orders, thus at the present moment there are steam mills in the southern provinces doing a great deal of work for the re-building of Belgian and French towns and villages in the War zone.

The furniture and cabinet work of Holland also enjoys a good reputation Abroad it is said, that a real Dutch interior is incomplete without its heavy, ball-legged table, its high-backed chairs and huge cupboard of carved wood, with possibly a glass fronted cabinet filled with old Delft earthenware! This may be somewhat exaggerated, but it is a fact, that our furniture makers still produce such things, which differ in no respect from the pieces their forefathers made. But modern styles have also made their appearance in our workshops, where handwork is still held in honour and where the home is part of the workshop. Besides such however, there are modern factories, with trained designers and makers turning out all kinds of household and office furniture. Houses are furnished in old and modern styles, ships are fitted out for home and foreign orders.

Interior of a Dutch Boot- and Shoe manufactory.

Chair making is often exercised as a separate industry in connection with the use of osier, cane and bamboo, mainly for the purposes of garden and conservatory furniture. We must be content just to mention as products of our wood industries, billiard tables, etc., frames, carriages and so on.

The branch included under the name of cooperage is also of historic fame — the surname "Cooper" is very common in Holland. Along the waterways this industry is seen following the demand of the herring fisheries for barrels and vats, though the centre of it is the province of South Holland. The staves are of deal, beech or oak and the hoops are supplied by the hoopmakers, who use willow for the purpose and for the basket plaiting they also practise. Among these workers are also found the clogmakers, among whom machinery is only just beginning to



Interior of the closing room of a Dutch Boot and Shoe works.

make its way; then there are the mat-makers, using reeds, straw, coco-fibre, esparto grass and pig's hair. Straw cases are chiefly made for the foreign market.

Finally we have fine wooden shavings, used for packing and filling and wood-flour used in making wall-papers.

HIDES, SKINS, LEATHER AND LEATHER GOODS.— Hides taken from our own cattle, as well as imported skins, are the raw materials for this industry. The principal use is shoe leather, both soles and uppers, and for technical purposes. The skins of calves, goats, sheep, horses and asses are all tanned and prepared for various uses, horses and asses provide the leather for carriage bodies and for water-tight boots, pig's skin makes saddles, book-binding and other fine work. But for many of these articles of luxury, seals, crocodiles, deer, dogs and snake supply the materials. As many of these have to come from abroad, and many of the Dutch hides are exported, there is a lively trade in hides, the markets for which are centred in Rotterdam and Amsterdam.

But we are concerned with the industry. In the first place that of tanning the hides, a labour which has occupied inhabitants of the south and east for centuries and under the old fashioned methods was a lengthy process, but since the introduction of various chemical processes takes much less time without being any the worse. The Dutch tanners have always enjoyed a good reputation and to-day also our leather tanneries supply a very excellent product.

The Dutch boot factories are also well known, the province of North Brabant having a special name in this industry, which is concentrated in the "Langstraat" where numbers of modern steam boot factories may be seen. But in other parts of the country too boots and shoes of all kinds are made for home and export.

Besides these leather industries, we have another namely: "endless" band making. This of course is closely connected with the engineering works, and some of the factories also make balata and camel hair bands for special purposes.

Of late years many leather specialities have been made here, which used to come from abroad, such as leather bags and pocket-books, harness, hunting gear, military equipment, leather trunks and many more things, which depend for their excellence on the quality of the leather and good workmanship.

TEXTILES AND STUFFS, YARNS, STRING, CLOTHES.— Our Dutch textile industry is one of the most important we have. For this reason we will touch on its history and the origin of such a great industry in Twente and Brabant, where fibres of kinds have been woven since centuries into clothing and rough fabrics.

Cotton, flax, jute and wool are the raw materials employed, the work is spinning, weaving and the making into clothes. The industry had its origin practically at the beginning of the last century, when weaving as a home industry passed over to the mills, where machinery took the place of handwork and everything was done much better and more cheaply and quickly. The remarkable increase in the population of Holland between 1830 and 1921, from 2.500.000 inhabitants to 7.000.000, caused a great demand for clothes, so that machine made textiles became a necessity to keep up with the demand.

Much might be written on the processes applied to linen and wool, each a special branch, differing as much as a linen tablecloth differs from a cotton sheet, or a cotton shirt from a woollen overcoat, but let it suffice to state here that the number of hands employed in our spinning and weaving mills is continually increasing, so that sometimes the demand can scarcely be supplied. Many women find employment in these mills.

Weaving machines in one of the most important weaving mills in Holland.

We may point out again how suitably this country is situated for this industry also. We have plenty of steamships to bring the raw materials and to carry away the finished article, for the materials required, with the exception of a certain amount of flax and wool, all come from abroad. The cotton grown as yet in our East Indian colonies is not nearly enough for our needs.

Many improvements have been introduced in the course of time, first in England then in Germany, and these have been closely followed here. Thus, both in Twente and elsewhere, may be seen the newest machines, both English and German, as well as American and Swiss, while our own engineering works do not lag behind in supplying what is needed in this respect. Among these latter are dyeing and finishing machines, which are very important factors in the keen competition with foreign stuffs.

Under the "textiles" are included all such things as are woven from every kind of fibre, vegetable, animal or mineral; thus we must not forget the cord and string makers, the kapoc cleaners and suchlike.

Generally speaking the textile industry may be classified as follows: cotton, wool and linen, then the specialists in jute and rameh, the kapoc works, silk weaving and asbestos works. Some people specialize again in one particular branch of textiles, such as: flannel, tricot goods, blankets, carpets, floor cloths, sail cloth, embroidery and lace making.

The rope-walks and string making are of course entirely different again, though counted as textiles.

The clothing industry is a continuation of the weaving process, one may say, and includes both under-clothing and men's and women's and children's garments of every description, even to hats. Boots of course we have just spoken of under leather goods. But one must not forget belts and gloves nor furs. The cleaning and dyeing of clothes come under this heading, as also umbrellas and walking sticks!

This bare summary will show the reader what a number of things come under number IX of our table, and which are provided by excellent up to date factories so that Holland can clothe itself and compete in these things with foreign countries too.

EARTHENWARE AND POTTERY, BRICKS AND STONE.— This group includes all those things made of clay. The first named products include our famous china works, but also earthen pipes and brick work, which brings us to the other things of the kind used in building, such as chalk-sandstone, mortar, concrete and asphalt, and also tiles for floors and roofs.

The kneading of clay with other materials and baking it is an industry one can scarcely call

Interior of a Lace factory.

specifically Dutch, as it is carried on in nearly every country and began in very primitive times of humanity wherever there was clay for the purpose.

Holland, with its great rivers continually depositing clay along their banks, is a country where the materials for ceramic art were always present in large quantities, so that its exercise is of very ancient date and our fore-fathers have left behind many an example of their aptitude and attainments in this art of pottery making, which may well bear comparison with the productions of other countries. One needs only mention the faience industry transferred from Haarlem to Delft by Herman Pietersz, so that about the year 1600 the fame of the Delft china was known in every civilised country and has continued until to-day. Our old tiles too gained a reputation which they have never lost. The pottery of Delft has perhaps lost some of its hold as an article of commerce, now that other lands have learnt the art, but as objects of art the Delft products still are sought after, and as the china industry in Europe, led by England and France, rose to its present height, our national industry revived again.

Brick kilns seen from the riverside.

Our first modern china works date from the middle of the 19th century. The rise of the firm Regout (founded in 1834) at Maastricht, which erected the first modern glass and earthenware works, led the movement. Modern faience work in Holland owes its success to Joost Thooft of Delft, who applied Wedgewood's discoveries and gave new life to the old industry there.

Besides these finer products, the groups of our earthenware industry are: the ordinary rough earthenware or pottery, faience and china, which all have their varieties. There are perhaps a hundred greater or smaller potteries in Holland, working for home use and for export, each district exercising the craft gives its own name to its special wares. The old and famous clay pipe makers of Gouda still carry on, but certainly have lost the status they once had together with the use of the stately Gouda pipe among smokers.

Builders have learnt to appreciate in an increasing degree the products of our industry in earthenware pipes for laying underground and our bricks and tiles. The clay found in Holland shows a great variety in kind, so that the products are equally variable, but modern technics have found good use for them all. Most of the brick and roof tile kilns are to be seen along our river banks, though some have followed other deposits in our soil. Building bricks, paving bricks, hollow bricks, ornamental stone and fire bricks and, last not least, the various kinds of roof tiles all bear the names of their places of origin Waal, Vecht, Utrecht, Rhine, Ysel, Brabant, Frisian and Groninguen bricks, etc. Besides these there are cement and chalk-sandstone, and newer sorts of artificial stone made in the more modern factories. The demand for mortar, portland cement, tras, concrete, asphalt (asphalt paper and felt) created factories where these things are made and, besides being used at home, are helping to provide the materials for the reconstruction of the devastated War areas.

Our summary would be incomplete without a few words on the Dutch tiles, of which there are two kinds, one for floors and one for wall covering.

The former are made of clay or hydraulically compressed cement and pulverised stone, the wall tiles are made of certain kinds of clay and are fired. These clays are plentiful here and the manufacture is an old national industry, which has followed along modern paths and reached a most flourishing condition.

GLASS AND PAPER.— A great deal of glass ware is imported into this country, but still there are glass works in Holland in several varieties.

First of all the bottle works. At the end of the 18th century the first of these was started at Leerdam, and now there are some fifty big glass-works, occupied in making bottles and other glass wares, such as cut-glass, window-glass and so on. Window-glass, i.e. the blown cylinder glass, is used for ordinary windows and the countless glass forcing-houses of our market gardens. Then there is looking-glass, i.e. cast glass, for mirrors, shop-windows, port-holes on ships and various other purposes. All the processes — cutting, polishing, bending, etc. — may be done in the same works, or in special factories doing one or two processes only.

Cut-glass work is done in seven works, together with polishing and engraving, two of these also doing glass etching.

The great industry in incandescent electric lamps calls for large numbers of special globes; during the War we learned to make these for ourselves and at Eindhoven there are special factories for the purpose.

The most important branch however remains the bottle making, an entirely independent branch, except where it is combined with distilleries in order to provide the bottles for their use.

Black, green and white bottles are made in many shapes and forms for all kinds of purposes. These factories are entirely modernized and well-equipped with machinery. The total production is about 70 million bottles a year, a quarter of which is exported.

Paper is included in this group of industries, and we can divide it into 4 classes:

1. paper, straw cardboard and cardboard work.
2. the graphic branches.
3. bookbinding, etc.
4. the book trade.

We cannot enter into many details, but may remark on the peculiar position this country has always occupied in paper making.

As early as Holland's Golden Age in the 17th century the Dutch paper-making industry won a great name for itself. A century earlier even, the Dutchman Martin Orgens had erected the first paper-mill in the town of Apeldoorn. From the very outset his paper was of a first-class quality, whilst books from that remarkable time, as well as the precious etchings from Rembrandt's age, have established the reputation both of Dutch writers and draughtsmen and of the quality of the paper on which their glorious productions have been perpetuated.

About 1672 the seat of Dutch paper-making, which paper later on came to be distinguished far and wide by the name of "old-Dutch" paper, was transferred to the "Zaan" district and continued to enjoy an international favour all over the world. Even to-day one of the machines universally used in paper-making, be it in a modernized form, viz. the mixingtub, still bears the name of "Hollander". In the beginning of the last century, however, Dutch paper-making of the "Zaan" district as carried on by hand, was falling into decline. But when in 1834 the first Dutch machine paper-mill had been established in the Zaan, the industry sprang into new life again.

In six paper-mills the manufacture is still nowadays pursued by manual labour, whereas

View of a Dutch Cardboard and Paper manufactory.

mechanical power is applied in about 35 mills with some 3.000 hands. Most of them are to be found on the Veluwe, a few others being established in the "Zaan" district and one of the largest being found at Velsen on the North Sea Canal. Kampen is producing straw-paper, Waddinxveen and Groninguen are making felt-paper. Amsterdam is the centre for rotatory and art printing-paper.

In the former Groninguen Fen-colonies the manufacture of straw-board has become a specifically provincial occupation. Some 18 factories are established there with a total output of 200.000 tons, more than 90 % of which is intended for export in normal circumstances.

The total exports of the various Dutch kinds of paper, however, until last year amounted to some 15 million kilograms more, to the value of 3 million gulden, whilst the production of cardboard totals 135 million kilos, to the value of 6 million gulden and a half.

As for the graphical branches, a number of about 1200 dailies and weeklies, some of which having a very large issue, speaks for the fact that a considerable part of the paper manufactured in Holland is used for the purpose of providing mental pabulum for the Dutch people. Dutch literature, journalism and graphic arts as such, however, have been treated elsewhere in this book. Dutch printing-offices, chiefly established in the more important towns of the country, number about 500 with some 14.000 typographers, and execute also large orders from abroad. In fact, our larger printing-establishments work in all possible languages of the world, even in Assyrian and Sanskrit if desired.

Our art printing-establishments, which are busily concerned with supplying foreign demands, specialize in the making of: atlases, scientific engravings, maps, illustrated catalogues, picture postcards, labels, lithographic, artistic and heliographic prints, in short all the finer sorts of printed work, etchings as well as pictures, printed in single colour or in three or four tints.

All this is generally known, and if it is not, it is high time that it should be!

EDIBLES AND BEVERAGES, TOBACCO.— The many branches of industry concerned with these things in Holland would form a list of formidable dimensions and certainly too long to be included here. Summarizing therefore as much as possible, we can place in one group those industries using the products of our Colonies and other tropic lands, for instance cocoa, distilled spirits, sugar and tobacco; added to which there are other valuable wares, such as: grain, coffee, spices and tea.

Without giving precedence to one or other of these wares — vinegar, beer, cocoa and chocolate, chicory, yeast, corn, flour, spices, sugar, tobacco, salt or whatever it may be — the value of which as an article of commerce may fluctuate with the demands of the time and according to economic rules, we will begin with what is most interesting to the foreigner, for whom this book is intended.

The cocoa and chocolate industry is about one hundred years old, when, after many experiments, a Dutchman C. J. van Houten of Weesp near Amsterdam succeeded in separating the superfluous fat contained in cocoa beans from the other constituents, and it was possible to make a cocoa-powder, with which people could prepare a palatable and nutritious beverage. This was the beginning of our flourishing cocoa industry. With van Houten's factory as forerunner some fifty others followed in course of time, as well as about twenty sugar and chocolate works, which take the half-made cocoa from other factories and convert it into confectionery of all sorts.

The Dutch cigar factories are well known in the industrial and smoking world. Various circumstances, both of social and geographical character, have exercised an influence on the

Interior of a Dutch Cigar-factory.

View of a Dutch beetroot-sugar manufactory.

distribution of factories, where tobacco is prepared and made into cigars and cigarettes in this country. The handling of tobacco has always been treated with care and attention in Holland, as it is one of the foremost products of our Colonies, especially the Sumatra covering leaf for cigars, so that Dutch cigars are sought after and appreciated by smokers all over the world. The high-class leaf in the tobacco industry is the Sumatra and Java covering leaf, then the Borneo and Seed-leaf tobacco; the other wrapping and filling leaf is made from other sorts of Java growth, to which is sometimes added Brazilian tobacco, which makes the Dutch "Havana" cigars, which are of such high reputation. Our export markets are in every quarter of the globe, and the fame of Dutch cigars may be heard in every language!

But there are other products of our Colonies almost equally famous and also manufactured in Holland. For besides our cocoa factories, tobacco and cigar works we have our coffee-roasting establishments, rice-husking mills, as well as the chemical works treating oils and fats and so on.

The industry concerned with edibles and beverages, however, also profits by the products of our own soil.

Most important of all is, perhaps, the industry that handles the by-products of potatoes, a national food above anything else. The manufacture of potato-flour is all but wholly localized in the northern provinces more especially Groninguen. A number of large mills (about 30) are established in the district of the former Fen-colonies, producing together an annual supply of about a million sacks of potato-flour, the "factory potatoes" being yielded over an area of 80.000 acres.

Under normal circumstances about two thirds of the output are exported, the rest being intended, as already mentioned, as a material for glucose, dextrin and syrup factories, which are also established in that flourishing province of Groninguen, the products of which are also exported for the most part.

The considerable yield of the Dutch beet-root cultivation has given rise to a great sugar-industry. The first factory was erected in 1857 at Zevenbergen, in the very midst of the vast beet-root fields of Zealand and North Brabant. The number of factories increased gradually, particularly in the west of the country, so that in one of the latest sugar-seasons the total output of about 30 large sugar-factories established there, amounted to 160.000 tons of raw sugar at 100 %. Three fourths of it is refined in five refiningworks, established at Amsterdam, Groninguen, Vlaardingen and Roosendaal, which besides providing for home demand, operate chiefly for export and in normal times handle more than is produced in Holland, from which it appears that raw sugar is imported from abroad.

The Dutch salt-works, numbering 26, produce an average amount of 65.000 tons of salt annually.

Then follow the various industries concerned with our own dairy produce, a subject we have fully discussed in the chapter on Cattle Raising. The Dutch butter and cheese maintain their reputation in the world and now keep up an extensive export trade in these things.

Our luxuriant orchards in the rich fruit-districts of the Betuwe, a river-island in the province of Guelderland, besides the nursery-gardens for all sorts of delicate fruit in the district of Westland near the Hague, together with the extensive market-gardens in a considerable number of places adaptable to the purpose, have given birth to the mechanical preservation of fruit and vegetables, in so far as they are not eaten in the country itself or intended for export as fresh fruit and vegetables. The preparation of jams and fruit-juices is mostly carried out on the spot where the fruit is gathered.

The number of factories of preserved vegetables, fruit, jams and fruit-juices, comes to nearly a hundred in all.

PRECIOUS METALS AND DIAMONDS.— Turning from these articles of industry so agreeable to our taste in this land of "milk and honey", we might end our chapter perhaps. But there is one group left on our list of trade statistics and that is the handling of precious metals and diamonds.

These things have a place all to themselves in our industrial world.

Neither gold nor silver is found in Holland, but, as we have so often repeated, that is no reason why an industry in precious metals (and copper and brass) should not flourish here. Our gold and silver smiths of the Middle Ages made themselves a name and in the 17th century the little town of Schoonhoven and some places in Friesland, could show a flourishing industry in precious metals. But the many wars in which Holland was involved following that period were fatal to such peaceful arts and their influence was felt until well into the 19th century. But now our modern works have been established most successfully and are of remarkable extent. Both in secular and ecclesiastical sections our gold and silver smiths are regaining their old renown.

The diamond industry has a special position of its own. Its origin lies in Antwerp and Bruges, then towns of the "South Netherlands". But when Antwerp was plundered by the Spaniards in the 16th century, the diamond workers took refuge to a great number in Amsterdam, which soon became a centre of the industry and has remained so to the present day. The number of diamond works at the present day is about one hundred, most of those engaged in this trade are Jews.

This industry, engaged in producing one of the most costly articles of luxury, is naturally greatly subject to all the changes felt in the general welfare. No crisis in the world's affairs, certainly not excepting the late War and its consequences, but it has been keenly felt in the diamond trade. Notwithstanding these economic influences Amsterdam has kept its position at the

Modern Dutch Silver Beaker.

head of the diamond trade and in its many factories the rough diamonds are cut and polished at some 8.000 mills by about 10.000 workmen, who form, with their industry, one of the chief characteristics of our capital, and no visitor from abroad should fail to get an introduction to see one of these diamond works.

A great share of these finished diamonds goes to the United States, but the whole world has markets for them, not only in Europe, but in Asia and South America. We need only name a few of the famous stones cut and polished at Amsterdam — the Victoria, the President Reit, the Excelsior, the Cullinan and the Kohinoor — to show the prestige of the industry.

NEW METHODS WHEN THE WORLD RESUMES A NORMAL COURSE.— Before finishing, I want to emphasize once more that the present book, bearing the title of "Modern Holland", is published at a time when the consequences of the War are still felt. The book is, however, intended to give to interested foreigners an idea of what our country is like in normal conditions.

But the ruinous European War has, at least in the beginning, also had some good influence on this country. Some of our industries have been compelled to find new fields of activity. Products that had hitherto been obtained from abroad, were becoming scarce and were not imported any more. Hence, our national industries were thrown on their own resources and had partly to supply the want of such products or — as one of our most popular sayings so typically has it — they had "to put the hand to the plough".

At first the results were excellent. As long as raw materials were sufficiently available our industries proved equal to manufacturing what was required. Holland could find a good many new industries and make them remunerative.

When the supplies of raw materials from abroad were, however, being stopped, many factories had to be closed down. It remains to be seen if these trades will ever come to full development again. Some at least are likely to be a lasting acquisition to the Dutch industries.

On the whole the War has acted stimulatively on industrial life in Holland, which already before the War had vigorously come to the fore. In 1913 the "Industrial Club" was founded at Amsterdam, whilst at this date of the Centenary of our regained Independence several trade- and industrial-exhibitions were held with great succes. Other corporations of well known Dutch industrial bodies may also be named, viz. "Maatschappij van Nijverheid", "Nederlandsch Fabrikaat", (intended to promote the production of wares of purely Dutch origin) further the Bond of Manufacturers Societies and the Dutch Employers' Association. At Utrecht "Annual Industrial Fairs" have been organized, being very successful in this town situated in the very centre of the country. The organization of manufacturers has been expanded and furthered and the general associations of manufacturers have joined together to form an Industrial Board, as the representative of Dutch industry.

Without shutting our eyes to the great dangers menacing Dutch industries, we may safely say that brilliant prospects are opened to our trades and that Dutch industrial men do not fail to invigorate the position of Dutch Industry in general.

This chapter, treating of Holland's modern industries, is, like the foregoing chapters on "Modern Holland", meant to illustrate how the Dutch engage in all possible sorts of occupations, thus helping to secure for their native country a modest, though honourable place among the modern states of the world.

SOME PAGES ON ECONOMICAL GEOGRAPHY.— The scope of this book does not allow of including a detailed economic-geographical description of the various industrial centres in Holland. A number of excellent handbooks and publications have, however, been published on this subject.

In nearly all of the eleven provinces of the country the most diverse forms of

View of a Dutch Cotton goods manufactory.

industries are found, the mutual connection of which is sometimes difficult to trace.

Our important textile manufacture, with its considerable *cotton-mills* (spinning and weaving), is chiefly to be found in the eastern part of the province of Overysel (Twente) and in Veenendaal (in the province of Guelderland), but also in the eastern part of Guelderland and in the province of North Brabant, as well as in part of the provinces of North and South Holland, especially in the towns of Haarlem and Leyden. *Woollen manufacture* is principally concentrated in North Brabant, where we also find our *linen-manufacture*, though this is also pursued at the centres of cotton-manufacture.

The *jute-industry* finds its home near Ryssen in the province of Overysel and Goirle in North Brabant. *Flax-industry* is carried on in the South Holland and Zealand islands as well as in the provinces of Friesland and Groninguen, in the north of the country. *Leather and shoe manufacture* have their principal seats in North Brabant. Large *breweries* are established in the larger towns, such as Amsterdam, Rotterdam, Amersfoort and The Hague whilst a great number of smaller breweries are to be found in the south of the country. Also *cocoa* and *chocolate* manufactories are mainly found in the larger towns, besides in the "Zaan" district, — which is noted for the many manufactures going on there, — and in the little town of Weesp both in North Holland. Our *sugar-manufacture* (of beet-roots) is chiefly found in Groninguen, North Brabant and Zealand-Flanders, not to forget the manufactory, in fact the second largest of all, established at Halfweg near Haarlem. *Potato-flour mills* are established in the Fen-Colonies of the province of Groninguen. *Tobacco* and *cigar factories* are to be met with all over the country, mainly in the larger towns, but also in a great many villages of North Brabant.

Among the foremost industries are the *potteries* at Maastricht, the *zinc factory* at Budel, the large *spirit* and *bottle factories* of Delft, Schiedam and Vlaardingen. *Oil* and *fat* manufacture is carried on in Delft in South Holland and in the "Zaan" district in North Holland, as well as in the provinces of Overysel, Friesland and Groninguen. Margarine is manufactured in Rotterdam and Dordrecht in South Holland and in Oss and Helmond in North Brabant. *Brick-fields* are situated partly along the banks of our principal rivers and may be found in almost all of the Dutch provinces, chiefly North Holland, Zealand and Overysel, along the river Ysel and in Twente. Guelderland ranks first, however, with about one half of the aggregate number of factory-hands. The *chemical industry* in its various forms is spread all over the country. The *diamond industry* chiefly centres at Amsterdam. As the principal seats of *iron works, shipbuilding and the manufacture of tools and implements*, I mention first of all the two chief ports Rotterdam and Amsterdam, then Haarlem, Utrecht, Flushing, Hengelo, Tilburg, besides the whole of the district of "De Dijk" from Rotterdam to Gorinchem. The small shipbuilding trade is settled in a great many flourishing places along the various larger and smaller rivers of the country, particularly in the province of Groninguen.

Regarding the addresses of the manufacturers in the various branches, the publishers of this book, Messrs. Nijgh & van Ditmar's Publishing Co. Ltd. at Rotterdam, will be very glad to procure the same for the readers, free of charge.

MODERN HOLLAND

SECOND SECTION

WM H. MÜLLER & CO.

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HEAD-OFFICE

THE HAGUE · HOLLAND

The Dutch Union for Dairy Industry and Milk-Hygiene.

Is Holland not in the first place the country of milk, butter and cheese? Do you know the endless green plains, the rich meadows? Do you know the Dutch cattle, stolidly grazing in those meadows in the summer; and in the winter housed in the fresh, clean farms scattered all over the country? If you do not, you should come and see these things and then you will understand why Holland is in the first place a land of milk, butter and cheese.

If one could go back fifty years, one might see the farmers and the farmers' wives making butter and cheese every day from the cow's milk. And every week they went to the market to sell their wares. This was picturesque, it was idyllic, but ....uneconomical. For, with all the hard work, a very fluctuating product was the result; every farm made a slightly differing butter and cheese, and for mass sales and mass export especially, this dairy produce was not suitable. Moreover, full profit from scientific methods could not be obtained on the farms; the results of physiological, chemical and bacteriological investigations, the inventions in machinery, and many technical improvements were not taken advantage of. This was very clear to the minds of some industrial leaders and they began setting up dairy factories.

In 1878 the first was started, thus making a new departure in the Dutch dairy industry. The good example was quickly followed and in a short time several dairy factories were at work. At first these were all private concerns, the owners bought the milk from the farmers and made the butter and cheese at their own risk. In 1886 this method partly underwent a change. The farmers in some places clubbed together and started dairy factories, where the milk from their farms was worked up and the produce sold; these were the co-operative factories

After a number of years, when there were many of these private and co-operative factories, some co-operative concerns began to unite and thence onwards the principle that private concerns must disappear was propagated. The idea of joining together to further their common interests does not seem to have occurred to them, everything had to give way to the co-operative principle.

It is clear that under these circumstances, the other co-operative factories and the private dairy-owners felt the need of a common organisation to defend the general interests of the whole industry and thus the Union for Dairy Industry and Milk-Hygiene was founded! The object of this Union is to promote the interests of the Netherlands Dairy Industry and the Milk-Hygiene in the most general sense.

The quality of the dairy produce. The first point which has, and always will have, the attention of the Union is to strive continually to improve the quaiity of Dutch dairy produce, for this is the only way by which one can attain a reliable and regular market for the produce. The efforts of the Union were thus exerted in two directions. In the first place the institution of comparitive inspections of the dairy produce has been an inducement to good work in the various dairies, and to improvement whenever faults came to light. In the second place the Union has always lent its support to the Government's control of butter and cheese, by which means buyers have a sufficient guarantee of the purity of the produce, of the proper percentage of fat (cheese) and that the amount of water in the butter is not above the normal figure. The results thus obtained give every reason for satisfaction. Progress has been made in the quality of the produce and the Government's control marks are finding a growing appreciation abroad. The Federation is thus convinced that it is on the right road and that it must not relax its efforts until the uttermost has been attained.

The equipment of the dairies. Hand in hand with the striving for improvement in quality

EENIGING VAN ZUIVELFABRIKANTEN
IN NEDERLAND
97 FABRIEKEN
45000000 LITER MELK PER
VERWER

Stand of the Union on the Industrial Fair at Utrecht (Holland).

goes the conviction that only the best equipped dairies can produce the best results. Every improvement in organization of the industry is in the intrest of it and the dairies have always been to the fore in introducing technical improvements, new machinery and in applying the inventions of science.

Foreign trade. The dairy manufacturer has always been able to inform himself of the particular needs of foreign wholesale traders and importers, through the medium of his personal relations and so has had the opportunity of keeping in touch with the desires of his clients, not only as regards the quality and kind of the produce, but also in the matters of packing and dispatch, etc. This explains the excellent results of the export trade as practised by the industry.

Many other activities. We might thus continue to describe the many other activities of the Dutch Union for Dairy Industry and Milk-Hygiene, such as the propaganda in favour of improvements in milk, the support afforded to scientific institutions, information supplied to foreigners, the work done in international relations. But all this would carry us too far, we only desire to point out the significance of the industry for foreign buyers.

The produce itself. Butter and cheese were the first dairy products. Butter is made in the Union's dairies, both salted and unsalted. It is packed in many different ways: in casks, in firkins, in cases, in tins of various sizes and weights.

Cheese is made in all sorts and weights; Gouda cheese, Edam cheese, fancy cheese, cream cheese, Cheddar and Cheshire cheese. These all have various guaranteed minimum percentages of fat in the dry matter: full cream (45), 40, 30 and 20 per cent. These are indicated by a mark on each cheese. According to its destination the cheeses are treated and packed, either in cases, boxes, bladders, tin, paraffine, etc.

The various preparations of conserved milk made in Holland are also of great importance: condensed milk with or without sugar, milk powder, sterilised milk, evaporated milk, cream in tins, milk for infants, infant's foods, etc. which are all made and packed for export.

Years of experience have thus taught how to make and pack in the most effective manner all the products derived from milk.

The scope of the Federation. Beginning with a comparatively small number of members, the Federation quickly grew into a large organization. The members number about 158, representing some 200 dairy factories, mostly of considerable powers. The quantity of milk handled by these dairies is about 700 million kilograms per annum.

The Central Office of the Federation is at the Hague, (Laan van Meerdervoort 18, tel. Haag 2215, Telegr. address Veeveezet). This office is prepared to give any information either in writing or personally.

The Members of the Union. The following is a list of the names of the members of the Union for Dairy Industry and Milk-Hygiene.

FREIA's
Zuivelproducten
VEENWOUDEN
ROOMBOTER
NUTRICIA
INDUSTRIEELE

Stand of the Union on the Industrial Fair at Utrecht (Holland).

Members of the Union for Dairy Industry and Milk-Hygiene.

Province: FRIESLAND.

Zuivelfabriek "Bovenknijpe",	Bovenknijpe.
J. Helder Pz.,	Dokkum.
Zuivelfabriek "Friesche Palen",	Friesche Palen.
A. Lankhorst,	Heeg.
T. J. de Boer,	Leeuwarden.
Zuivelfabriek "Freia",	Leeuwarden.
N. V. Lijempf,	Leeuwarden.
Vereenigde Zuivelfabrieken,	Leeuwarden.
C. L. Kleiterp,	Makkum.
Zuivelfabriek "Noordwolde",	Noordwolde.
Kon. Ned. Mij. van Kaas- en Roomboterfabrieken,	Sneek.
N. V. "Normandie",	Sneek.
N. V. "Sloten",	Sloten.
Oppers & Frieslandia,	Wolvega.
N. V. "Workum",	Workum.

Province: GRONINGEN.

Zuivelfabriek "De Nijverheid",	Groningen.
Gebrs. Wouthuis,	Hoogkerk.
Veendammer Melkinrichting,	Veendam.
Wildervankster Melkinrichting,	Wildervank.
N.V. Oldambster Zuivelfabriek,	Winschoten.

Province: DRENTHE.

Coöp. Stoonzuivelfabriek,	Assen.
N.V. Stoomzuivelfabriek,	Coevorden.
Coöp. Stoomzuivelfabriek,	Ruinen.
Coöp. Zuivelfabriek "Ons Belang",	Wapse.

Province: OVERIJSSEL.

Coöp. Zuivelfabriek ,,Borne",	Borne.
C. H. Ensink,	Delden.
G. J. Westerhof,	Denekamp.
Fa. Koopmans,	Enschede.
Fa. Gebr. Wansink,	Holten.
N. V. Salland,	Hardenberg.
Zuivelfabriek "Kuinre",	Kuinre.
Zuivelfabriek "Statum",	Lemelerveld.
Zuivelfabriek "Kingma",	Oldemarkt.
Coöp. Zuivelfabriek "Dulder",	Saasveld.
Zuivelfabriek "Vooruitgang",	Slagharen.
Zuivelfabriek "Steenwijkerwold",	Steenwijkerwold.
A. H. Brummelhuis,	Wegdam.
Coöp. Melkinrichting "De Eendracht",	Zwolle.
Zuivelfabriek "Mastenbroek",	Zwolle.

Province: GELDERLAND.

Zuivelfabriek "Bommelerwaard",	Ammerzoden.
N. V. Melbo,	Arnhem.
Zuivelfabriek "De Harselaar",	Barneveld.
Zuivelfabriek ,,Azewijn",	Bergh.
Boterfabriek "De Boterbloem",	Dreumel.
Zuivelfabriek "Overbetuwe",	Elst.
Coöp. Zuivelfabriek "St. Anthonius",	Groessen.
Ver. Veluwsche Melkproducten Fabrieken,	Harderwijk.
Coöp. Zuivelfabriek "Ons Belang",	Heumen.
Coöp. Boterfabriek "De Eendracht",	Herven.
Coöp. Boterfabriek ,,De Hoop",	Leeuwen.
Coöp. Zuivelfabriek "De Boekhorst",	Lochem.
Coöp. Boterfabriek "St. Isidorus",	Malden.
Coöp. Boterij ,,Unicum",	Megen.
J. E. Schaap & Co.,	Nunspeet.
Zuivelfabriek "De Eendracht",	Nijkerk.
N. V. Melkerij "Lent",	Nijmegen.
Coöp. Zuivelfabriek "Wehl".	Wehl.
Coöp. Zuivelfabriek "Isidorus",	Wijchen.
Zutfensche Melkinrichting,	Zutfen.

Province: UTRECHT.

Coöp. Melkcentrale ,,Amersfortia",	Amersfoort.
N. V. "Landlust",	Baambrugge.
Fabriek van Melkproducten "Insulinde",	Breukelen.
Fabriek van Melkproducten "De IJssel",	Montfoort.
Melkinrichting "De Landbouw",	Utrecht.
N.V. Melkcentrale "Het Sticht",	Utrecht.
N.V. Utrechtsche Melkinrichting en Zuivelfabriek	Utrecht.
Melkinrichting C. G. v. d. Lee,	Utrecht.
Hygiënische Modelboerderij,	Utrecht.
Melkinrichting "De Onderneming",	Utrecht.
Zuivelfabriek "De Vooruitgang",	Woudenberg.
N. V. Melkinrichting "Zeist",	Zeist.

Province: NORTH-HOLLAND.

Hollandsche Fabriek van Melkproducten "Amsta",	Amsterdam.
N.V. Melkinrichting "Nieuw Plancius",	Amsterdam.
Vereenigde Amsterdamsche Melkinrichtingen,	Amsterdam.
N.V. Melkinrichting "Holland",	Amsterdam.
Melkinrichting v/h. "De Eendracht",	Amsterdam.
Coöp. Vereeniging "Assumptio",	Amsterdam.
Stoomzuivelfabriek "De Holland",	Castricum.
N.V. Melkinrichting "De Sierkan",	Haarlem.
M. A. Verdel,	Haarlem.
Coöp. Centrale Melkinrichting,	Haarlem.
Melkinrichting G. Kranenburg,	Haarlem.

Melkinrichting "Jong Holland",	Den Helder.
Hilversumsche Melkinrichting,	Hilversum
N.V. Hygiënische Melkinrichting,	Hilversum.
West-Friesche Gecondenseerde Melkfabriek,	Hoorn.
Van Heel's Condensed Milk Cy.	Naarden.
N. V. Melkinrichting "Sloten",	Sloterdijk.
Melkinrichting "Velsen",	Velsen.
Fabriek van Melkproducten "Neerlandia",	Weesp.
Zuivelfabriek "Zaanlandia",	Zaandam.

Province: SOUTH-HOLLAND.

Mij. Kaasfabriek "Oud Holland",	Bodegraven.
Coöp. Zuivelfabriek "De Eersteling",	Brielle.
Fa. B. Veth & Co.,	Delft.
Coöp. Centrale Melkinrichting,	Dordrecht.
N.V. Dordrechtsche Melkinrichting,	Dordrecht.
Mij. Pasteur, Melkinrichting,	Gorinchem.
Goudsche Melkinrichting,	Gouda.
Melkinrichting "De Landbouw",	Den Haag.
Melkinrichting "De Sierkan",	Den Haag.
Melkinrichting v/h. „Vollebregt",	Den Haag.
Melkinrichting "Rhijnland",	Den Haag.
N.V. Hygiënische Melkstal "De Vaan",	Hillegersberg.
N.V. Leerdamsche Kaas- en Roomboterfabriek,	Leerdam.
Centrale Melkinrichting Kingma,	Leiden.
N.V. Melkinrichting "De Landbouw",	Leiden.
Melkinrichting "Dijk en Rhijn",	Leiden.
Fa. F. van der Kloot,	Leiden.
Zuivelfabriek "Loosdrecht",	Loosdrecht.
Coöp. Zuivelfabriek "Delfland",	Naaldwijk.
Zuivelfabriek "Voorne",	Nieuwenhoorn.
W. D. Prins,	Nieuwerbrug.
Galak's Condensed Milk Cy.,	Rotterdam.
Zuivelfabriek „Aurore",	Rotterdam.
Condensed Milk Cy. of Holland,	Rotterdam.
Fabriek van Melkproducten „Uithoorn",	Rotterdam.
N. V. Vereenigde Zuivelbereiders,	Rotterdam.
N. V. Rotterdamsche Melkinrichting,	Rotterdam.
Coöp. Melkinrichting "Vooruitgang",	Rotterdam.
Fa. Slee en Co.,	Rotterdam.
Koninklijke Confederatie,	Rotterdam.
Zuivelfabriek "De Ducaat",	Rozenburg.
N. V. "Hollandia",	Vlaardingen.
N. V. "Excelsior",	Woerden.
Centrale Fabriek van Melkproducten,	Zegwaard.
N. V. "Zelandia",	Zegwaard.
Mij. "Nutricia",	Zoetermeer.

Province: ZEALAND.

Fabriek van Melkproducten "Zeelandia",	Middelburg.
Vlissingsche Melkinrichting,	Vlissingen.
Coöp. Roomboterfabriek "Het Hart",	Wemeldinge.

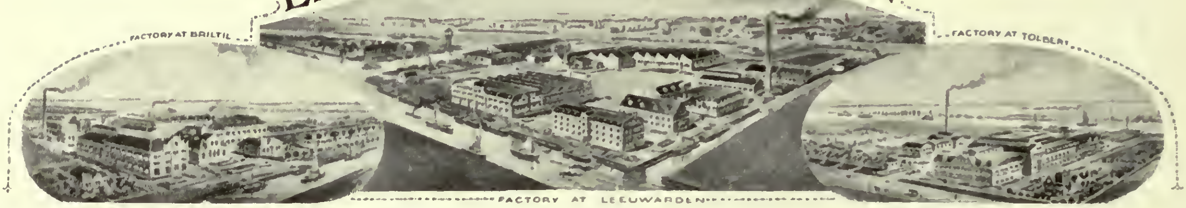
Province: NORTH-BRABANT.

Coöp. Zuivelfabriek "De Hoop",	Boxtel.
N.V. Bredasche Melkinrichting	Breda.
N.V. "De Hoop",	Breda.
Moderne Melkinrichting	Breda.
N.V. "Lacto",	Cuyk.
Coöp. Stoomzuivelfabriek	Dorst.
Coöp. Zuivelfabriek "St. Jacobus",	Den Dungen.
Coöp. Melkinrichting "St. Joseph",	Eindhoven.
Zuivelfabriek "De Hoop",	Erp.
Coöp. Zuivelfabriek "St. Willebrord",	Esch.
Coöp. Zuivelfabriek "Fijnaart",	Fijnaart.
Coöp. Zuivelffabriek "De Eendracht",	Gemert.
R.K. Coöp. Zuivelfabriek "St. Petrus",	Heesch.
Coöp. Zuivelfabriek "St. Lucia",	Helvoort.
Stoomzuivelfabriek "De Volharding",	Klundert.
N.V. "Vacca",	Oud-Gastel.
N.V. C.J. Oomen & Zn.,	Oosterhout.
Coöp. Roomboterfabriek "Eensgezindheid",	Oyen.
Fa. Gebrs. Klatt,	Oss.
M. van Schayk,	Rosmalen.
Coöp. Melkinrichting "St. Christoffel",	Roermond.
Coöp. Tilburgsche Melkinrichting,	Tilburg.
Firma Joh. Völker,	Veghel.
Coöp. Stoomzuivelfabriek,	Wouw.
Coöp. Stoomzuivelfabriek "Zevenbergschen Hoek",	Zevenbergschen Hoek.

Province: LIMBURG.

Coöp. Maastrichtsche Melkinrichting,	Maastricht.
N.V. Melkinrichting "De Nijverheid",	Venlo.

"LIJEMPF" LTD.-LEEUWARDEN



Trade Mark.

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LEEUWARDEN
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FABRIEKEN
N.V. LIJEMPF.

Tel.-Addr.: Lijempf
A.B.C. Code 5th Ed.

The excellent qualities of Frisian Dairy cattle, which are well known far beyond Europe, have given the dairy produce of this prosperous province a special advantage on the world's market.

It is therefore not surprising, that there are in Friesland about 130 Dairy Produce Factories, which in normal times use annually 600.000 Tons of milk. The tendency for concentration has also penetrated in this trade and as one of the largest concerns of the Dairy Industry, we mention the Limited Company "Leeuwarder IJs- en Melkproducten-

Part of the Central Warehouses at Leeuwarden.

fabrieken" (Leeuwarder Ice and Milk Products Factories), known in short as "Lijempf". This Company, which employs a staff of about 600 people, who are divided over eleven factories, owned by "Lijempf", was established in 1912 by the well-known foremost leader of Industries in Groningen, Mr. J. E. Scholten.

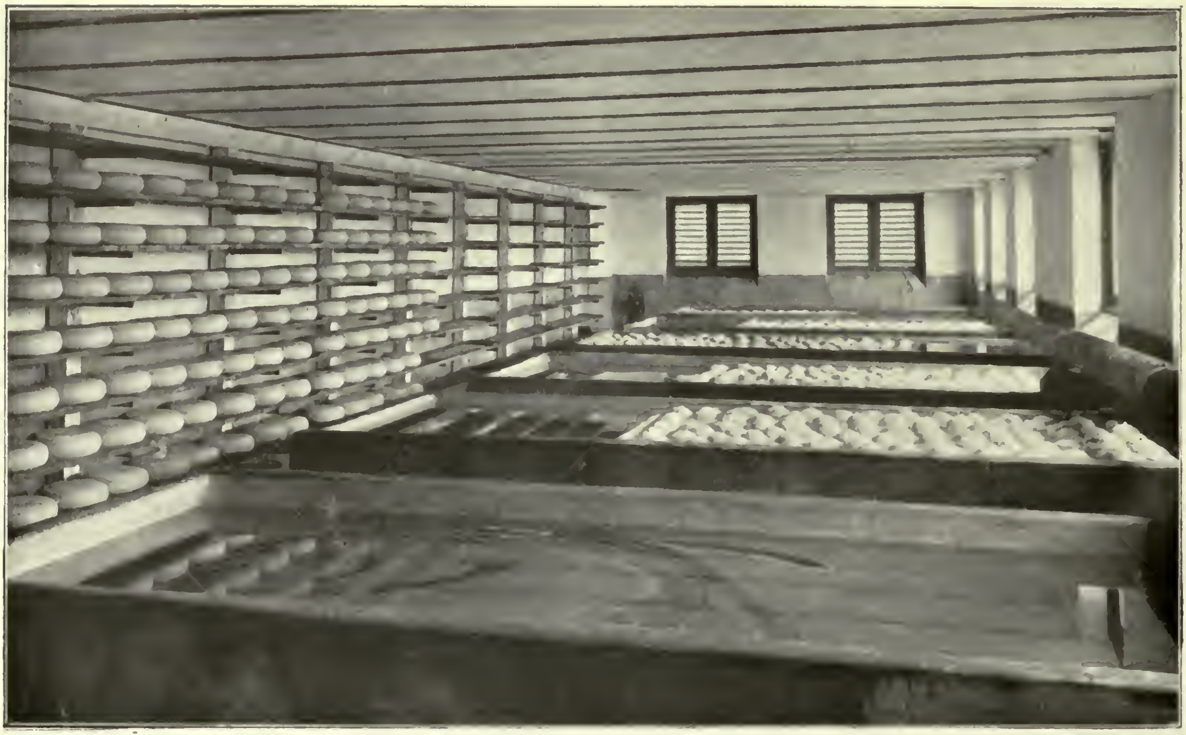
Under the management of the present General Manager, Mr. J. F. Huttinga, six Dairy Factories were bought in 1913 in the villages of: Anjum, Augustinusga, Briltil, Doezum, Drachten and Suameer. At the same time an architectural and technical Bureau were established with a view to rebuilding and installing these factories with the latest equipments of the dairy industry. In 1915 two more factories were bought at Berlikum and Metslawier and in 1916 another factory was completed at Tolbert and in 1921 another factory at Winsum was bought. The "Lijempf" now possesses eleven Dairy Factories including the principal factory at Leeuwarden, which are all situated in the centre of the cattlerearing districts of the two Northern Provinces of Holland.

This extensive business, with a yearly turnover of ten million guilders, is conducted from Leeuwarden, where the central warehouses, cold storage plant, tinplate factory, case factory, construction works, a.o. are also situated. Its property is insured for 6 million guilders.

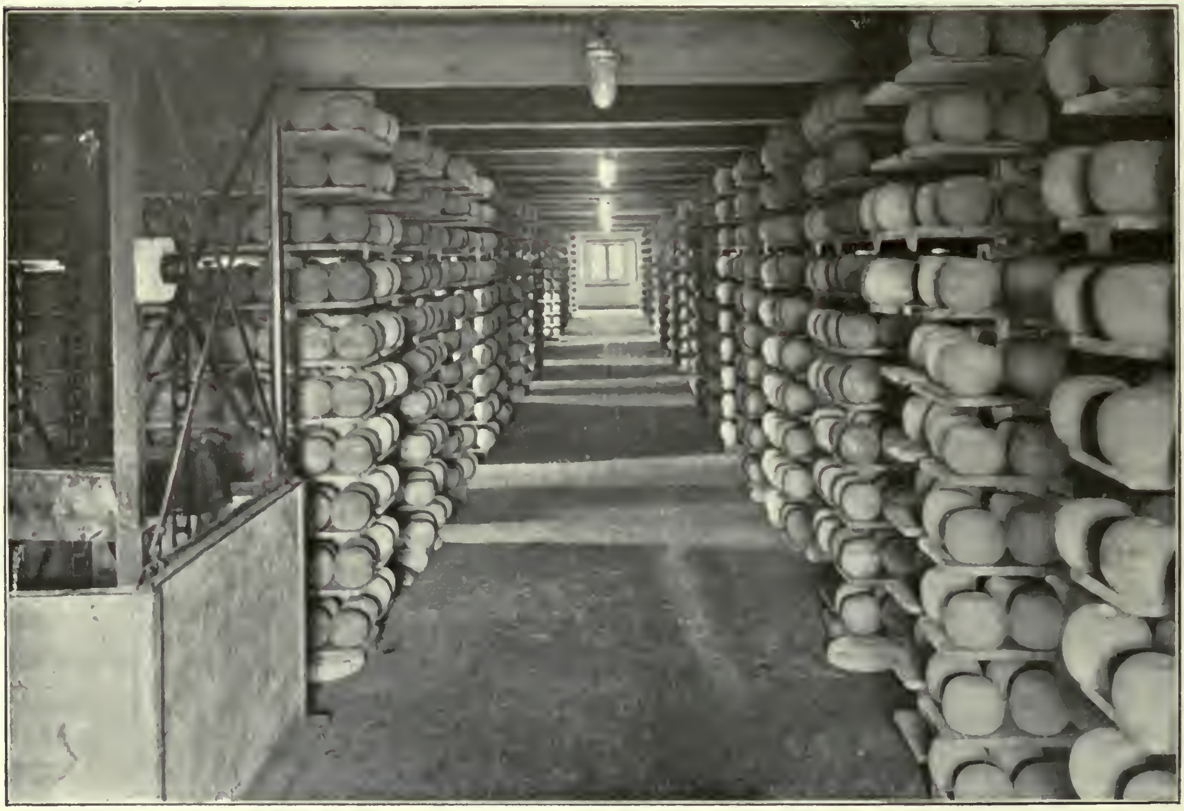
In the eleven factories 26 boilers are in use, whilst five factories can be worked by electricity or steam.

The annual consumption of fuel amounts to 20.000 M^3. of peat and 2500 tons of coal.

Receipt of Milk in the Dairy at Drachten.



Brinecellar of the Dairy at Suameer.



One of the garrets of one of the Cheese-warehouses at Leeuwarden.

Condensed milk, which is one of the chief products, is manufactured by the factories at Berlikum and Briltil and is despatched from Leeuwarden in tins which are manufactured there. The milk is despatched all over the Continent of Europe by rail, railway trucks running up to the factories' premises. The goods for England are despatched by steamer via Harlingen, Rotterdam or Amsterdam. The factory adjoins both the railway and the canals.

A quantity of 10.000 tons of condensed milk is despatched annually.

Butter and Cheese are made in nine of the factories, but Berlikum, Briltil Winsum and Drachten in addition manufacture milkpowder, whilst the latter factory is furthermore equipped for the manufacturing of entirely soluble Milkpowder. By dissolving this powder in a glass of water, pure and palatable milk is obtained. This process is unique on the Continent of Europe.

The Company also manufactures Casein, which is dried at Leeuwarden; it finds a ready sale as a raw material for building-up foods, such as beef-tea, and also for the manufacture of articles made of galalite and for the paper- and textile industry.

For the stricking of threeply wood this product is a much desired adhesive.

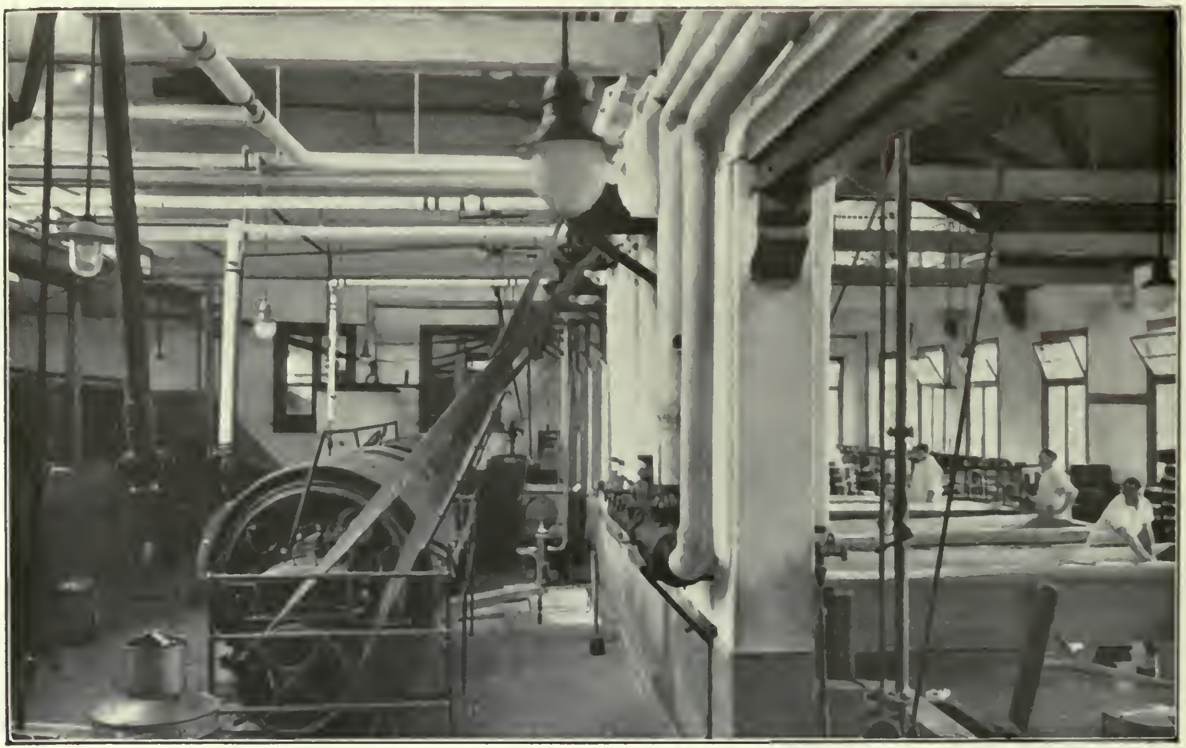
It is needless to say, that the scientific composition of the products of the "Lijempf" is guaranteed by an up to date laboratory and that the most careful hygiene and control are observed before the despatch of any commodity.

The chief outlet for the products of the eleven factories is in the first place the United Kingdom. The "Lijempf" has its own offices and warehouse in London, situated at 43/45 Great Tower Street E.C. 3. Furthermore the goods are exported to Germany, Austria, Belgium, France, North America, the Mediterranean Ports and the Levant, the Dutch East Indies, British India, Colombo, Africa, etc.

The rapid development of this concern, only eight years in existence, can be gathered from the statistics of raw milk used, also from the figures relating to butter production:

Interior of the Case factory at Leeuwarden.

Part of the large laboratory at Leeuwarden.



Cheese Manufactory and Churnroom at Drachten.

Milk.		Butter.	
1913	20.000 tons	1913	697 tons
1914	21.000 „	1914	556 „
1915	34.000 „	1915	981 „
1916	54.000 „	1916	1094 „
1917	48.000 „	1917	1102 „
1918	30.000 „	1918	781 „
1919	37.000 „	1919	905 „
1920	45.000 „	1920	1000 „
1921	55.000 „	1921	1500 „

During the years 1917, 1918 and 1919 the supply of Milk was decreased as a result of the War, the shortage of cattle fodder being the most disturbing factor.

The turnover of Cheese may be estimated at 450.000 Edams, Goudas, Cheddars and Cheshires, the latter weighing 80 pounds each.

Special mention deserves the large cold storage at Leeuwarden, which is able to accomodate 200 tons of Butter in Casks of 50 kilograms each and may be cooled down to 7° Celsius.

Recently the Belgian Government entrusted 126 tons of Butter to this cold-storage, the British Government stored 50 tons, and the Netherlands Government repeatedly avails itself of the same.

To give an idea of this concern, it is worth while mentioning that the factory which produces the cases uses annually wood to the value of 125.000 florins, whilst the tinplate factory uses tinplates to the value of 500.000 florins.

60.000 tins of condensed Milk are despatched daily.

The factories are frequently visited by businessmen from abroad, who often express their admiration for the broad basis upon which this Dairy Concern has been established and for the splendid hygienic principles observed. A visit to the factories of the "Lijempf" is therefore most interesting and well worth while.

One of the Coolingcells of the Cool chambers at Leeuwarden.

"Hollandia" Anglo-Dutch Milk & Food Co. Vlaardingen

Sixteen factories of milk products in Holland and Canada.

Head Office at Vlaardingen (Holland).
Sales offices abroad: London, New-York, Brockville (Canada), Paris, Antwerp, Gibraltar, Copenhagen, Gothenburg, Christiania, Bergen, Constantinople, Alexandria, Algiers, Tunis, Piraeus, Saloniki, Cyprus, Malta, Johannesburg, Cape Town, Durban, Mombassa, Batavia, Samarang, Cheribon, Tjilitjap, Belawan, Sabang, Singapore, Penang, Bangkok, Colombo, Rangoon, Trinidad, Havana and numbers of other places.

The "Hollandia" Company was established in 1882. Its chief purpose was the preparation and sale of condensed and preserved milk.

"Hollandia" was the first factory in Holland to make these articles. Before 1882 is was indeed scarcely possible to make condensed milk with sugar in this country, as the laws concerning sugar taxation stood in the way of any such undertaking. In January 1882 however, certain ameliorations of the law came into force and immediately some energetic men came forward and established the "Hollandia" factory.

From the very beginning there was every reason for satisfaction with the results and the product of the factory was described in the Pharmaceutical Weekly (in 1884, 2nd volume no. 15) as follows: "The milk condensed in the Vlaardingen works can compete with any of the kind made in foreign countries". Thus the Dutch Colonies were able to get their supplies of "tinned" milk from the mother country and ships taking in stores in Dutch ports were able to take Dutch condensed milk with them, instead of Swiss milk as they had been used to do.

Head-office and one of the Vlaardingen factories.

Milk reception at one of the factories.

The "Hollandia" having thus been introduced successfully, the demand increased steadily and the business expanded, as may be seen from the following figures:

1882	original capital	180.000	guilders.
1893	capital increased to	250.000	,,
1896	,, ,, ,,	400.000	,,
1899	,, ,, ,,	800.000	,,
1906	,, ,, ,,	1.200.000	,,
1908	,, ,, ,,	2.000.000	,,
1913	,, ,, ,,	4.000.000	,,

of which 3.000.000 guilders were issued and fully paid.

In 1920 the remaining 1.000.000 guilders were issued.

Events in the history of the "Hollandia" Co., in connection with these extensions of capital were: the opening of a new factory at Bolsward (Friesland), the purchase of a third large factory at Purmerend (North Holland), the erection of various smaller factories and receiving stations in many milk centres, the establishment of many smaller or larger factories of other dairy produce than condensed milk and the purchase of a factory at Oud-Gastel and in Canada at Brockville.

When one considers, that all the factories are situated in districts where cattle raising is the chief occupation of the people, where in the summer the famous Dutch and Frisian cattle graze in the lush grass of the Dutch meadows, which are the best grazing lands in the world, and when it is also noted that a close and keen inspection is continuously exercised over all the fresh milk received (the raw material of the product) while, laboratories and technical staffs at all factories add their quota to the scientific and hygienic efficiency of the factories, then one realises how it is, that the "Hollandia" Co. has triumphantly taken up competition with its foreign rivals and overthrown the monopolies they held before 1882.

It will thus be seen, that *condensed*, or otherwise preserved *milk* is the chief product of "Hollandia". But *butter* and *cheese*, both subject to control under *Government Supervision* are also made in considerable quantities. Thus in the year 1913 no less than 2.000.000 K.G of butter and 3.500.000 K.G. of cheese were turned out. But these figures are far exceeded by those relating to the output in condensed and sterilised milk. Of these, condensed full cream milk with sugar and without sugar, sterilised full cream milk and condensed skimmed milk with sugar, in 1914 more than 44.000.000 tins were sold.

The significance of these quantities comes home to one, when one considers the packing material needed to contain all this milk, e.g. 4.000.000 K.G. of tinplate, and then, in order to make the 900.000 or more wooden cases to pack the tins in, some 2.700.000 K.G. of planed wood, 68,000 K.G. of nails and for labels and wrappers some 180.000 K.G. of paper.

It will readily be understood, that although those departments of such a factory, where the milk is received, tested and converted to the various purposes in view are of the greatest importance, the various other departments such as, the tin-can shop, the carpenter's shops and the printing works are not to be overlooked. In these sub-departments much energy has been developed as time went on.

In order to reduce the general costs to a minimum, efforts have always been made to use machinery instead of hands wherever it was possible, so that the capacity of the factory could

A bascule for weighing fresh milk.

A corner of the Laboratory at Vlaardingen.

be increased without a corresponding increase of hands employed. This is no small number, for the total of employees in the various factories of the Company is at present about 1000 all told.

The interests of the personnel of the Company have always been a first consideration, as may be witnessed by the fact that there are now in the Company's employ 39 persons with more than 30 years service, 36 with between 25 and 30 years to their credit and 22 with between, 20 and 25 years, which facts speak volumes !

The Directors make a regular use of their right to dispose over 10 per cent of the profits for the "Employees interests". During the years 1913 to 1920 inclusive nearly fl. 750.000 were devoted to this purpose, while a reserve of about fl. 200,000 in addition was created for "Sick and Relief Fund". Many old employees of the Company have retired with pension.

There are without any doubt, many people who would willingly endorse the words of the above quoted Pharmaceutical Weekly which said: "The foundation of the "Hollandia" Company was of the greatest importance to Holland."

The Royal Netherlands Dairy Company at Sneek

Forty years ago the "Nederlandsche Maatschappij van Kaas en Roomboterfabrieken at Sneek" (of which the above title is a translation) was established and that event was a turning point in the history of the Frisian dairy industry. In 1879 attempts were begun to introduce newer methods in butter and cheese making, but they did not have much effect as long as only points of minor importance were taken in hand. The idea of transferring the making of butter and cheese from the farms to steam dairies met with the greatest opposition from deeply rooted custom. It was very difficult to persuade the Frisian farmers' wives and daughters to give up the task of butter and cheese making, for which, they had so justly been famous for generations, and to renounce their control over what had been the source of their greatest welfare. By dint of extreme exertion and great experience, they had succeeded, with the poor means at their disposal and with no more than primary education, without technical expert advice (except that of their own class), in making a product, which they thought would be endangered by any other method of production.

Circumstances however proved too strong for this prejudice, the rise of competition in Denmark, Sweden and Holstein on the one hand and the falsifications practised in the butter trade on the other, jeopardised the good name of Frisian dairy products and all kinds of ways were sought to remedy the evil. Better technical knowledge and better equipment for their work in order to produce more uniformity of results were resorted to. Special enquiries were set on

Head-office of the Royal Netherlands Dairy Company at Sneek.

foot to find out the reason for the superiority of the Danish butter. A commission of enquiry was sent out to Holstein and Denmark, but its report did not point out the reforms which were really needed. On the contrary, this report said on the subject of the transference of dairy work from the farms to the steam dairies: "The Commission very much doubts whether there is any future for steam dairies for cheese and butter making in Friesland." The opposition to the steam dairies thus became stronger than ever. It even went so far, that in some cases a condition was inserted in leases for farms, that the farmer should not send the milk from the farm to a steam dairy.

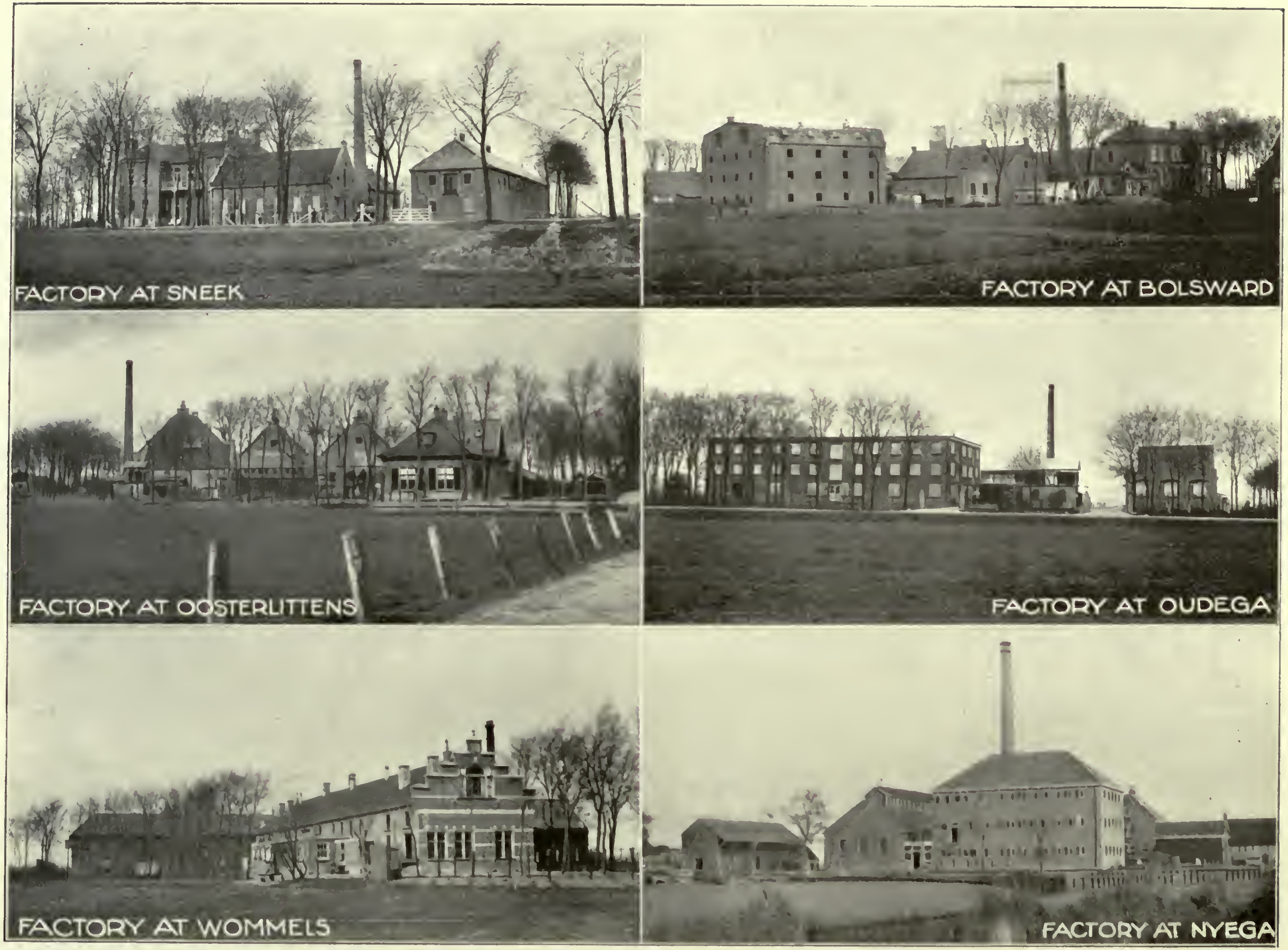
Notwithstanding all opposition the idea of steam dairies gained ground and in 1879 the first of their kind were erected in South Holland at Delft, Leiden and Soetermeer; in the same year they were started also in Friesland, first at Veenwouden, later on at Leeuwarden and in 1880 the province of Groningen followed suit with steam dairies at Winschoten and Zuidbroek. Two years later a combination was effected at the instigation of the wholesale dealer Harmens of Harlingen, who was equipped with sufficient capital and excellent commercial training. This was the foundation of the steam dairies at Sneek, where the first of them was erected. Another was also built at Bolsward and since then others at Oosterlittens, Oudega, Wommels and Nyega. Experience proved, that this organisation had thus successfully given the example for the best suited form of steam dairy for Friesland. Thus a revolution was accomplished in the Frisian dairy industry and one moreover which has restored its former name for excellence to the Frisian products.

Steam dairies once being firmly established in this way, they quickly came under the influence of progress in modern technical science and hygien, so that the butter and cheese now turned out are of the highest quality and uniformity. The profitable results did not take long to become evident. Butter making became an industry which could be carried on all the year round equally well, scientific improvements were made in all the material used, packing and despatch became such as satisfied the demands of foreign markets.

The traveller passing through Friesland nowadays sees everywhere the chimneys of these marvellous steam dairies, where the milk of the famous Frisian cows is being turned into butter and cheese. The "Koninklijke Nederlandsche Maatschappij van Kaas en Boterfabrieken" has its head office at Sneek; the Company handles 40 million litres of milk annually and in the summer makes some 2000 cheeses. These dairies are in the heart of Friesland, where there is the greatest welfare, and they keep at the forefront of the dairy industry, as they also began to modernise it in 1882.

We lately visited the steam dairy at Nyega which has just been completed. This dairy is the last word in progress and shows the intense care expended by the Company on its dairies. It is equipped to handle about 50.000 kgs. of milk daily and is a demonstration of the fact that the milk can be mechanically treated all through the process and that with a well thought out arrangement of space the whole process can be done to the greatest economic advantage. Plenty of light is supplied from overhead and the white filed spaces give the freshest appearance possible. All the whey is at once returned to the farms and rinsing water carried off above ground without delay, in fact every hygienic measure possible has been adopted.

On arrival at the dairy the milk is automatically weighed and a sample taken from each vessel, which is immediately examined for its degree of fat, according to which, the price paid to the farmer is fixed. The milk is pumped through the cooler (at a temperature of less than ten degrees) and passes into large pans for creaming. The milk destined for cheese is passed from these pans to one side, the cream for butter to the other. The cream goes into the pasteurising machine, which heats it to 85 degrees, then it is cooled off and pumped into the cream basins,


FACTORY AT SNEEK
FACTORY AT BOLSWARD
FACTORY AT OOSTERLITTENS
FACTORY AT OUDEGA
FACTORY AT WOMMELS
FACTORY AT NYEGA

The factories belonging to the Royal Netherlands Dairy Company.

where the souring process is carried out and when ripened the churns receive it, their capacity being 2000 litres.

The cheese is made in another wing of the building. There are large zinc tanks, where the rennet is added to the milk and then the cheese is formed in presses. Lorries carry the cheeses into the rooms where, with the aid of steam and water the shapes are perfected and then the cheese is passed to the pickling room, where the pickle troughs run all round the room, while the high cheese racks are in the middle. After about four days the pickling process is complete and the cheeses go to the store rooms to dry on racks. This is the critical part of the process for the keeping quality of the cheese and it needs daily watchful care. For export the cheeses are finally covered with a coating of red or yellow paraffine wax.

In the engine rooms may be seen the installation for the circulation of the pickle through the troughs, the cooling machines (50.000 calories) and the 50 H.P. engine for other purposes. Steam is supplied to the room where all apparatus is thus sterilised. Near the dairy chimney is the installation by means of which all iron is extracted from the water used in the dairy.

A separate building provides for the return to the farms of the butter-milk and whey, and contains enormous vats measuring 10.000 litres.

Every part of the dairy is arranged so that no practical advantage has been forgotten and transport between the steam dairy and the farms, and for purposes of despatching the butter and cheese, is facilitated by the situation at the waterside. One needs scarcely add that rigid hygienic rules are observed both as regards the employees and the materials used.

At Sneek there are large, cooled chambers for storing cheese.

Great demands are made of the dairy industry in the present day and it is the proud boast of the Koninklijke Nederlandsche Maatschappij van Kaas en Roomboterfabrieken that it has had a share in restoring its good name to the Frisian products both at home and abroad.

The Netherlands General Dairy Union

(Algemeene Nederlandsche Zuivelbond)

The introduction of factory methods into the dairy industry caused it to expand to proportions hitherto unknown, but to limit the international importance of Dutch dairy work to the period of the last half century on that account would be doing an injustice to its history. As early as in the 7th century, we find, the Dutch cattle, more especially that of Friesland, had such a good name, that the Frisians exported annually some 600 oxen to their eastern neighbours the Franks. In the 13th century, it is recorded that the Flemish were regular buyers of Dutch cattle and the institution, about that time, of the first cattle markets and butter sales-rooms at Amsterdam (1220), Leyden (1303), Hoorn (where the Weigh House was opened in 1386) proves that not only the cattle, but the milk, butter and cheese were also very important articles of commerce.

Frisian Cattle in the meadow.

The regular increase of the Dutch cattle stock (in 1920 it counted more than 2 million head, of which about one million were milch cows) provided such a rich dairy produce as far exceeded the needs for home consumption. With the exception of a short period, when speedily suppressed dishonest practices were attempted, the quality of Dairy produce from Holland has secured to it an excellent reputation far beyond the limits of the country's frontiers. This reputation was enhanced still further when scientific methods in the steam dairies perfected the production. In 1871 the first dairy factory was opened at Waddinxveen in South-Holland.

The enormous scope of the export of dairy produce is seen in facts such as, that of the 67 million kgs. of butter made in 1912 about 32 million were sent abroad, and of the 95 million kgs. of cheese, some 55 million kgs. were also exported. The Dutch cattle is no less highly appreciated. At the Dairy Show held lately in London (in October 1921), a cow of Frisian breed was awarded the highest distinction, both for appearance and for milk production.

Frisian farm.

The co-operative steam dairy instituted at Warga in Friesland in 1886 was the first sign of a wide movement among the farmers, with the object of keeping the working up of the milk supplied from their farms in their own hands. Of the 1050 dairy produce factories to be counted in Holland to-day, the greater part are established on co-operative basis. The quick spread of this movement is partly to be accounted for by the remarkable fertility of the Dutch cattle;

in 1910 the number of cattle to every 2500 acres of land was 613, the figures for Belgium were 482 and for Denmark 472.

The rise of factory methods applied to dairy produce brought in its train the organisation of better conditions for sale of the produce and the application of measures against dishonest practices. Legal protection contributed in no slight degree to the success of these measures. In 1890 we have the first Butter Law, in 1904 came the State Control for Butter marks and in 1913 for Cheese marks also. Added to this the State began to extend its practical interest in agriculture and in 1898 a section for Agriculture was installed in the Department for Home Affairs, followed a few years later by the institution of the Department for Agriculture, Industry and Trade. The installation of a consulate for expert dairy advice in 1897 made the intervention of the State of great practical value.

Dairy-factory in the province of Groningen.

In the natural course of events a conviction was thus formed, that a well devised organisation was needed to retain and enlarge the scope of the position Dutch dairy produce had made for itself in the world's markets. Such organisation, first in the provinces and then unitedly in the whole country, was the only way to provide hygienic guarantees in dairy work, to perfect it with the latest technical aids, in fact to apply every means possible, both of a preventive nature before the milk reached the dairies and during its handling there, such as would offer the best scientific guarantees and secure the success of the industry.

This conviction was expressed in 1900 when the Netherlands General Dairy Union, a federation of interests and known by the initials of its Dutch title F.N.Z., was instituted. This Union has its central office at the Hague and comprises seven provincial Unions of 490 co-operative dairies. Their names are:

the Union of Co-op: Dairies in Friesland, with 86 steam dairies supplied with milk by 14319 farmers;

the South Netherlands Dairy Union, with 134 steam dairies supplied with milk by 27500 farmers;

the Guelderland and Overyssel Union of Co-op: Dairies, with 104 steam dairies;

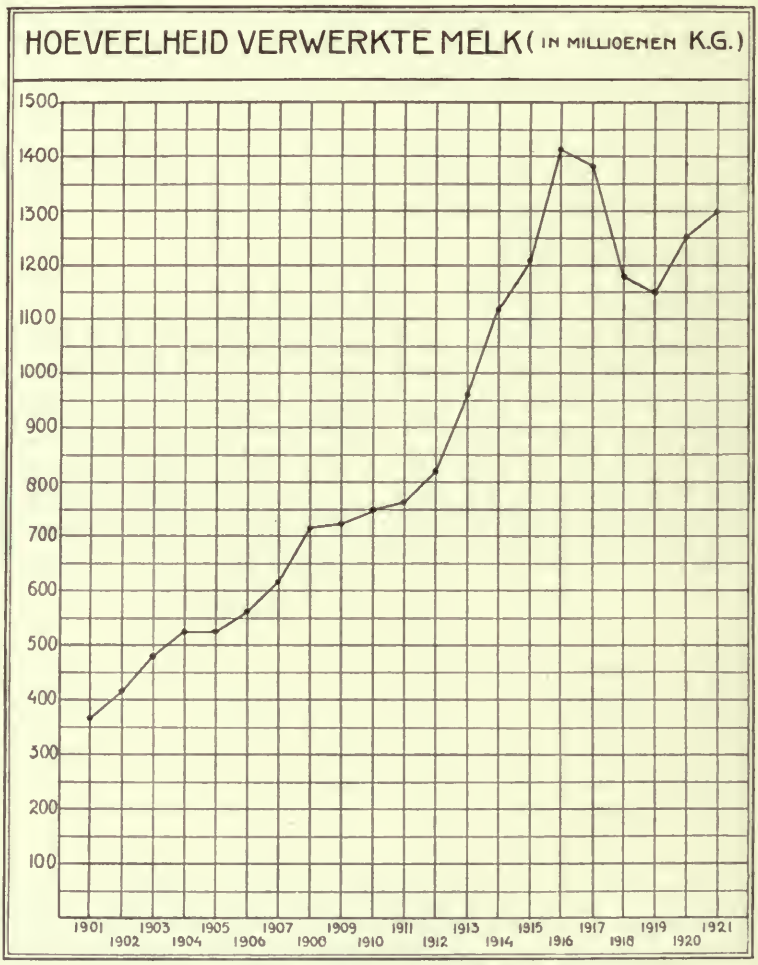
the Union of Steam Dairies in North-Holland, with 54 steam dairies;

the Union of Coop: Steam Dairies in Drenthe, with 55 steam dairies;

the Union of Steam Dairies in Groningen, with 15 steam dairies.

the Brabant Dairy Union, with 42 steam dairies.

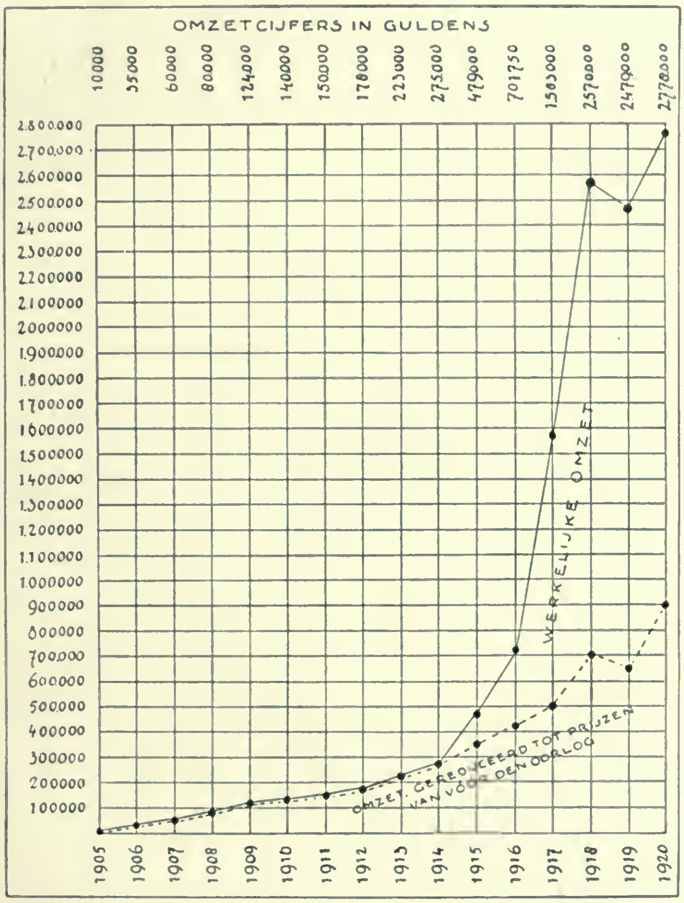
The chief characteristic of the F.N.Z. is the lending of its *indirect* services to further the sales interests of its members, who in 1920 placed a total output of dairy produce from 1260 million kilograms of milk on the market. The F.N.Z. does not take part in any directly commercial transactions, but applies every possible means which may promote the quality of Dutch dairy produce, including all those things needed for keeping the produce, packing and forwarding it, especially to the export countries.



Quantity of milk worked up in million Kilograms.

The activities of the Union are very varied. The guarantee of the F.N.Z. as to origin and quality, which accompanies all the butter and cheese coming from the steam dairies attached to the Union, demands reliable butter and cheese control stations. These stations, instituted by the producers themselves, have established themselves so firmly in their 20 years of practice, that the recognition accorded to Dutch dairy produce abroad is founded on their effective control. Only such persons as have an acknowledged high reputation are admitted in the controlling stations, which is in itself a guarantee that the producers themselves wish the good name of their produce to be above all suspicion. Periodical inspections and the issue of certificates contribute to perfecting the produce and technical officials go about giving advice in the steam dairies.

The benefit of co-operation in selling has been proved in such matters as regulation of the export, keeping the produce, packing, etc. The members are paid for their produce according to its quality and influence is thus exercised on the name it makes among foreign buyers. Business advisers are also at the service of the members of the Union. The Union also does more than this, it provides courses of lectures and technical schools where the employees in the dairies can obtain instruction, and after examination are awarded certificates. In the last twelve years 800 such certificates have been given by the F.N.Z. Text books on the theory of dairy work have also been issued, under such titles as: "Butter making in the steam dairies." "The examination of milk and milk products". "Cheese making at the factory". "Text book for stokers and enginedrivers." "Pasteurisation of milk and milk products". "Essays on modern dairy chemistry". The appointment of a travelling lecturer on engineering by the F.N.Z. is another proof of its determination to apply scientific methods to dairy work.



Turnover in guilders of the "Central Buying Office".

This is by no means all, however. The F.N.Z. also publishes a weekly paper for its members. Another department gives its services to arranging insurances for dairies and employees; provides information on commercial matters and advice, if needed, including that on the building and installation of new dairies and the purchase of materials.

The Technical Bureau at Utrecht, with an engineer at its head and skilled assistants, is the source of information and advice on building and alterations and on the purchase and installation of machinery or equipment.

Another Bureau is called "Central Buying Office" and is in Arnhem, here they purchase the coal, oil, packing materials, cleaning necessities, etc. for the dairies. The great importance of this branch of the work is not only the economic advantages of co-operative purchase, but also the opportunity thus afforded for control over the composition of the materials used, which has a direct influence on the produce. Nothing leaves the hands of the Arnhem office without having been examined by the analyst, who has a well equipped laboratory at Leeuwarden. The length to which this control goes may be judged by the institution (in 1920) of a committee whose duty it is to examine the question of the qualities parchment paper should possess to make it suitable for packing butter and what measures should be taken to prevent mold on butter.

The interests of the milch cattle stock are of course specially considered. The milch cows are kept within the sphere of private farming and are therefore exposed to many hygienic dangers, missing regular control as to health conditions. Friesland, having to maintain the excellent name it has acquired for its cows was particularly concerned thus and so it was the Frisian Union, the oldest member of the F.N.Z., which instituted a Health Control for cattle on a scientific basis. This service is housed in the same building as the laboratory at Leeuwarden, and has control over 26000 head of cattle; it strives to combat the tuberculosis plague, it investigates questions concerning manure and also as to water-supplies, it watches over the purchase of fresh stock and slaughtering conditions. No animal on the registers is sold unless it is free of suspicion of tuberculosis, which rule is an additional safeguard against infection through milk. The factory rules are very strictly adhered to by the Health Control service.

The above short account of the Union's work leaves no doubt in one's mind, that the Dutch dairy industry has a strong bulwark against the many dangers and difficulties besetting its path, in the General Dairy Union. That this national enterprise is justified in its endeavours by its success is well known. The home and foreign press constantly report the triumphs of the Dutch dairy cattle and their produce. These are largely due to the energy and perseverance displayed by the F.N.Z. in the promotion of the Netherlands Dairy Produce industry.

Headoffice at Alkmaar.

Co-op. Dairy Produce Export Ass^{n} "Noord-Holland", Alkmaar

Seven of the largest steam dairies in North Holland belong to this Association, handling about 30 million kilograms of milk annually. About 2 million kgs. of cheese are turned out every year and are stored in the new cheese warehouse at Alkmaar, where they are properly treated and prepared for export. In this warehouse can be stored some 200.000 Edam cheeses.

The cheese is subjected to inspection on being brought in and paid for according to quality, while every cheese is provided with the Government stamp recording the percentage of cream in its composition.

The Association sells 40 % Edam cheese in every variety from young to hard and in every kind of packing.

Trade Mark.

Friesche Coöperatieve Zuivel-Export-Vereeniging, Leeuwarden
Holland

Headoffice at Leeuwarden.

(Frisian Co-operative Society for export of butter and cheese)

Telegraphic addres:
Zuivelexport, Leeuwarden.

BUTTER and CHEESE.

Edam and Gouda in all sorts (full cream and with a minimum of 40, 30 or 20% of butterfat in the dry matter), own produce, of the very best quality and in all different packages, always ready for export.

TRADE-MARK
F C V Z E
PATRONAGE

The butter and every cheese stamped with the Government controlmark.

Turnover of last year (1921):
Butter £ 1226022.12.5
Cheese ,, 1343315. 0.2

A. B. C. Code 5th and 6th Edition and Private Codes.

Warehouse at Leeuwarden.

North Netherlands Cheese Sales at Leeuwarden
(Noord-Nederlandsche Kaasverkoop)

In the history of cheese making the turning point was reached when steam dairies were introduced, which led to co-operation. Once progress in this direction had been encouraged by the results, the necessity for closer co-operation made itself felt, especially with an eye to the selling of the produce. The circumstances attending the Great War outlined these interests more sharply and promoted the union of producers in large associations, which could entirely devote themselves to procuring the best quality of produce, providing effective means of storage and good methods of dispatch to destination for it.

Laboratory.

Thus in 1915, in the Northern provinces, a number of steam dairies joined together to provide for the sales of their cheese products, calling themselves the "North Netherlands Cheese Sales". This Society now comprises 27 co-operative steam dairies in Groningen, Friesland and Overijssel, which handle annually 125 million kilograms of milk and produce thus 6½ million kgs. of cheese. This cheese is mostly the Gouda and Edam kinds, but they also make "Leyden", "Cheddar" and "Cheshire" cheese. The diversity of demand in various countries to which the cheese is exported is kept in view, both as regards climate and the tastes of each land. Very special attention is paid to the quality and the composition of the cheese, all the steam dairies are members of a cheese control station, so that none of the cheese leaves the country without its State Control mark, which guarantees purity and quality as described. Moreover, in order to bring the quality up to the highest standard, a system has been introduced, which makes the payments to the producers dependent on certain conditions and classifies the kinds of cheese accordingly.

In the first place attention is paid to similarity among the lots, whereby it is possible to have ready for delivery in a very short time large lots of a uniform quality.

In the second place, care is taken that the shapes of the cheeses satisfy exacting demands, so that buyers receive an article answering their demands as to its outward appearance also. The rind must be intact, so that the cheese will keep well under all

Cheese Dairy.

kinds of conditions. Of no slight influence on the sale of the product are the smell and flavour of the cheese itself which things are naturally objects of every care.

In order to satisfy as far as possible every demand which can be made of prime quality cheese, the Society has provided technical assistance by trained men for those dairies which need improvements.

The steam dairies are also members of a provincial union of co-operative steam dairies, forming all together the F. N. Z., which affords them the greatest help in their aim to raise their products to the highest possible quality. They can thus dispose over trained employees and also dairy buildings and machinery which offer all the guarantees of succes.

Cheese Warehouse.

The storage places for the cheese are in Leeuwarden, Gouda, Hoorn, Alkmaar, Purmerend, Edam and Haarlem, where it is kept in such a way that buyers can be assured of properly prepared cheeses being sent to their orders.

The regulation of the sales and the forwarding of the cheese have been given into the hands of the Cheese Trading Comp. "Gouda" of Gouda, particulars of which appear elsewhere in this book. This Company has more than fifty years of experience as an exporthouse, with branches all over the world. Consequently the North Netherlands Cheese Sales (Noord Nederlandsche Kaasverkoop) is able to send cheese to any part of the world, in any quality desired and packed in any fashion desired.

Dairy-factory in the province of Groningen.

The Cheese Trading Company "Gouda" at Gouda.

The name of Holland will generally conjure up before the mind of any foreigner a vision of wooden clogs, cheese and butter. This may be beside the mark in some ways, but in one respect it is entirely correct, for one of the chief sources of welfare in Holland is touched upon and certainly a great factor in the life of the country it could not possibly do without. The low lying country by the sea was bound to bring forth the farmer, as the man who had the welfare of that country in his hands and applying to his labours all the seriousness and care native to his character, the Dutch farmer has succeeded in making an excellent name for himself in international agriculture, especially for his dairy produce which stands in the front rank in every part of the world. The cheese making industry may be taken as one of the most brilliant examples of dairy produce work and the above named company as an exponent.

Front view of the premises at Gouda.

Gouda is the centre of, and gives its name to the famous Gouda cheese It was there that Mr. C. van Eyk began trading in cheese in 1870. This was the beginning of the largest export business in cheese in Holland, handling every year many millions of kilograms.

The one difficulty appearing in the history of this business is want of space. Twenty years after its beginning regular overseas markets were being supplied and then the founder resigned his activities into the hands of his son, J. L. van Eyk, who began work in the cheese trade when he was 13 years old and is still the moving power of the Company.

The storage problem seemed to have been solved in 1903 by the erection of new buildings in Gouda and the business connections with South America and South Africa were completed.

The Company then began organizing a union of firms with common interests. Offices were opened at various places in Holland and the cheese makers thus found the buyers close to hand.

An important event in the history of the business was its conversion into a limited company in 1912. Hitherto the chief trade had been in full cream (45 %) cheese from the province of South Holland, but at this time the Company extended its trade to Frisian cheese (20 and 30 %) which was effected by a concentration of interests. This brought about amalgamation with the cheese trade of the firm van Kekem and Heusdens of Rotterdam, and with Harmens Bros & Co. Ltd. of London, the one a wholesale dealer in Frisian cheese and the other the shippers of the well known "Harmens' Perfection".

The progress of the business was thenceforward most prosperous. To the buildings at Gouda was added a carpenter's shop for cases and still more warehouses. In a labyrinth of cheese racks, through which threads its way a small railway track for the cheese trucks to run on, one may see millions of kilograms of cheese, the flat-shaped rounds of Gouda cheese, the ball-shaped Edam and also the smaller "dessert" cheeses. All these cheeses are turned over every day, cleaned and kept ready for despatch. Warehouses were bought or enlarged in various other places and motor boats acquired for quick transport along the canals and so on. Special attention is paid to the export to the tropics; the cheese is acclimatised in specially heated rooms and generally packed in bladders and, if needed, in hermetically closed tins.

New paths were unceasingly followed up. The cheese factory of the Full Cream Kaasbond at Bodegraven was bought and by this means the manufacture of the more luxurious kinds of cheese came into the Company's control. Later on an agreement with "Noord Nederlandsche Kaasverkoop" of Leeuwarden was arrived at, by which the Gouda Company acts as a sales-agent for the above combination. A quantity of 6½ to 7 million kgs. of cheese was thus secured for sale every year.

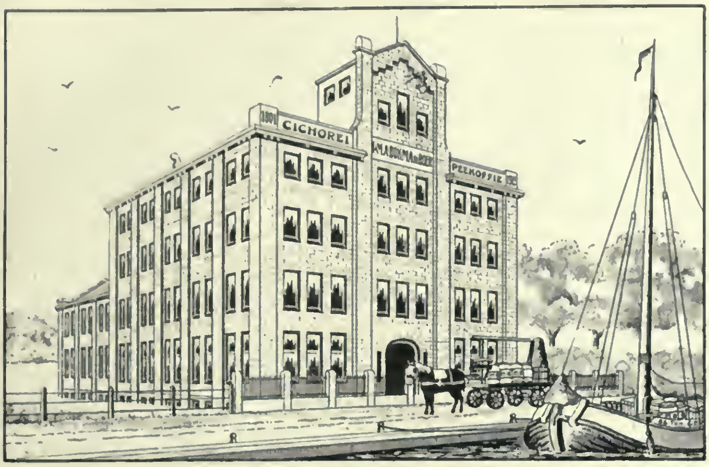
Three big export firms in the province of North Holland were also absorbed into the business, besides the Company acquiring the right to act as salesman for some six other cheese factories in that province. In 1919 an office was opened in Hamburg.

The growth of the Company has not yet ceased. Building alterations are going on at Gouda in preparation for the general revival of trade. Some 180 men are employed there, and in 18 different places in Holland the Company has branches.

Before the War, it will be remembered, there were about 100 million kilograms of cheese made in Holland annually. It will thus be clear what the prospects of such a Company as this must be. which makes use of all modern means in trade and traffic, at the same time never losing from sight the demand for quality in the article it handles.

The chicory factory of Messrs. M. A. Bokma de Boer, at Leeuwarden (Holland).

The most important chicory factory in Holland is that of Messrs. M. A. Bokma de Boer at Leeuwarden. The works as depicted in the illustration, cover an area of 800 square meters. On arrival at the factory the chicory roots are carried by automatic conveyors to the upper floors, which have been carefully designed for good storage. Special contrivances make it possible to distribute the roots to the floors below, whence they pass to the roasting ovens, the most important part of the treatment.



They then are passed on to the grinding mills and reduced to powder. These mills are regulated to such a degree, that six different grades of size in the grains of ground chicory, coarse or fine can be produced.

The chicory is sent out as required in cases, bales or in packets, down to weights of ¼, one tenth or one eighth of a kilo. Automatic filling and weighing machines do this packing.

Both in Holland and abroad there is a great demand for guaranteed pure chicory. The firm Bokma de Boer, therefore placed its factory under the inspection of the Chemical Bureau for Analytical Research of van Ledden Hulsebosch at Amsterdam.

The passable degree of purity required in Holland is: max: 3 pCt. sand, max: 10 pCt. ash, max: 16 pCt. water, but a *minimum* of 60 pCt. extract. At the request of several chicory factories, this minimum was fixed, as they found it impossible to attain the figure which had been fixed for extract previously, viz. 65 pCt. In Belgium also no more than 60 pCt. is demanded. But what is the case with Bokma de Boer's chicory? After many experiments they succeeded in producing a chicory far above the desired normal strength. Samples were sent from various shops to the laboratory in Amsterdam and the results exceeded every expectation. Two groups of figures taken at random from five reports follow here:

Strength of extract:

77.30 pCt.	75.98 pCt.
75.07 „	70.17 „
75.02 „	76.80 „
75.44 „	78.06 „
72.93 „	75.80 „
total 375.76 pCt.	total 376.81 pCt.
Average: 75.15 pCt.	Average: 75.36 pCt.

Thus a good 15 pCt. above the normal standard. The firm has received several testimonials from various testing stations approving their chicory. Still more satisfactory is the fact that the sales are constantly increasing, which shows the appreciation of a superior article.

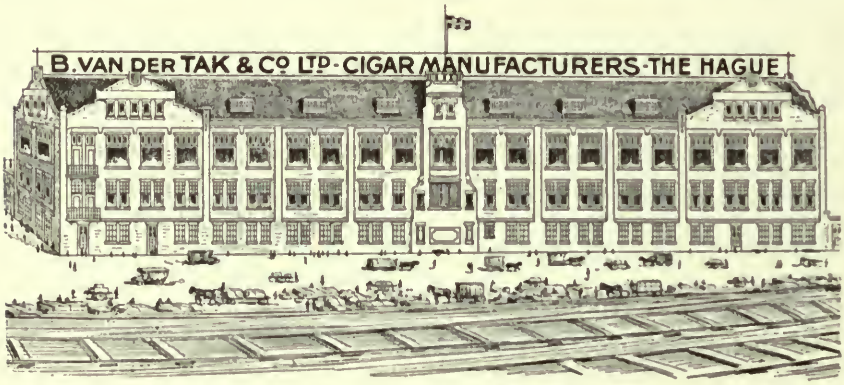
Cigarfactories B. van der Tak & Co. Ltd., The Hague

(The "Cigar-Specialists of Holland")

Among the Cigar manufacturers who largely promoted the fame and repute of the *Dutch cigars*, the firm mentioned in this heading takes first rank.

The factory of Messrs. B. van der Tak & Co., Ltd., was founded at Rotterdam in the year 1854 by Mr. B. van der Tak, whose portrait is given herewith, and the Directors have been the pioneers of those Cigar exporters who extended their sphere of activity all over the world. A number of 108 different countries to which they are exporting, as shown from their books, is giving proof of the widespread connections they are entertaining in every quarter of the globe.

Next to their restless, energetic travellers and the activity of their Managing-Directors, the worldwide reputation they enjoy is principally due to the superiority of their make, as a result of their over 65 years' experience in the business. A thorough knowledge of the raw material, combined with an all-round familiarity with the requirements of the world's markets, enabled them to acquire the art of satisfying the tastes of even the most fastidious smokers.


B.VAN DER TAK & Cº LTD. CIGAR MANUFACTURERS THE HAGUE

General view of the Factories.

Mr. B. van der Tak.

For bringing the shapes of their Cigars to the highest perfection, their factories are equipped with up-to-date pressing-machines which give their Cigars a striking, artistic appearance.

A specialty is made of packings for the tropics. Their Cigars, to whatever country they are exported, are not affected by the climate, thanks to many years study of packing in all its details. All this is the reason why the fame of their make is so widespread and why their title as "The Cigar-specialists of Holland" is fully justified in every respect.

Of the great number of brands they specialize for Export trade the: "High Life", "Castelar", "B.V.D.T.", "Crown", "Koh-I-Noor", "Corona", "After Dinner", and "Holland Express" Series are coming to the front. These lines have almost become a household-word in such oversea territories where smokers are found.

In the year 1915 their Rotterdam factory was burnt down entirely and business was transferred some time ago to The Hague (Holland), where their plant is now installed in two buildings. The structure of the new factory, a reproduction of which is shown above, is under preparation. The dimensions of the new building are: Front 80 M., deep 25 M., high 12 M. Surface of each of the 5 floors 2000 M^2.

Another factory of Messrs. B. van der Tak & Co., Ltd., is located at Eindhoven (Holland).

In normal times they have 500 men at work. Directors are now: Mr. Jac. J. Kalker, Mr. H. E. Meulman and Mr. H. J. de Bres.

Hengelo Electric and Mechanical Apparatus Manufactory "Heemaf", Hengelo (Holland)

Bird's eye view of the Heemaf Works.

In 1894 a consulting engineering firm was founded in Borne, a small countrytown in the eastern part of Holland, which in 1897 moved to Hengelo, an industrial center near the German frontier on the railroad from Amsterdam to Berlin. This consulting engineering firm was reorganised into the "Hengelosche Electrische en Mechanische Apparaten Fabriek: Heemaf", in 1900.

The Company, aside from building power lines and installing electric apparatus, started the manufacturing of switches and resistances. This was in the good old times when direct current was used almost exclusively and copper and brass were found more lavishly in apparatus than iron. When in 1900 the management of the Company became identified with the "Twentsch Centraal Station voor Electrische Stroomlevering", which started the erection of an alternating current powerstation on ground adjacent to the Heemaf, the Company also started the manufacturing of A. C. apparatus for low- and high voltage. The intimate connections between manufacturing concern and powerstation were of great advantage to the former especially where the latter soon developed itself considerably, distributing electrical energy in a large territory. Advantage was taken of the experiences made in the power house, nothing new was put on the market that had not had a thorough trial under actual operating conditions.

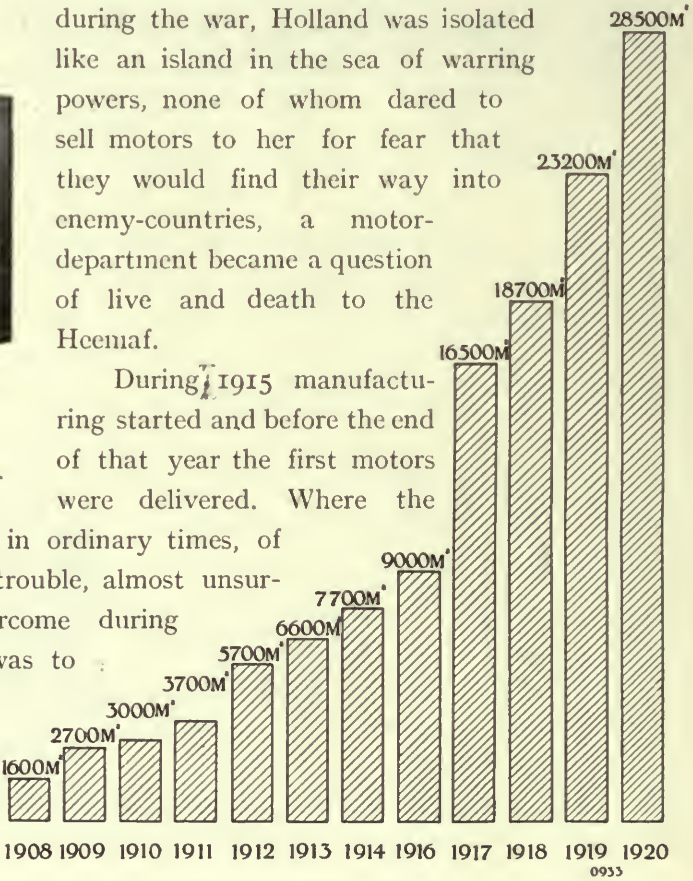
The stores-building.

The great hall.

Thus the Heemaf developed into the largest manufacturer of the electrotechnical branch in Holland. Among its products may be named: oilcircuitbreakers, all apparatus for the electrification of factories as: switchboards, starters, controllers etc., the electric apparatus for cranes and other hoisting machinery, electric traction materials etc. The consulting engineering and contracting department also developed in line with the manufacturing department undertaking some big jobs: electrifying factories and building high voltage transmission lines. Already before 1914 the great turnover in motors, bought from foreign concerns, had indicated the desirability starting a motor-manufactory. When however, during the war, Holland was isolated like an island in the sea of warring powers, none of whom dared to sell motors to her for fear that they would find their way into enemy-countries, a motor-department became a question of live and death to the Heemaf.

Switchboard for the power-station at Folkestone.

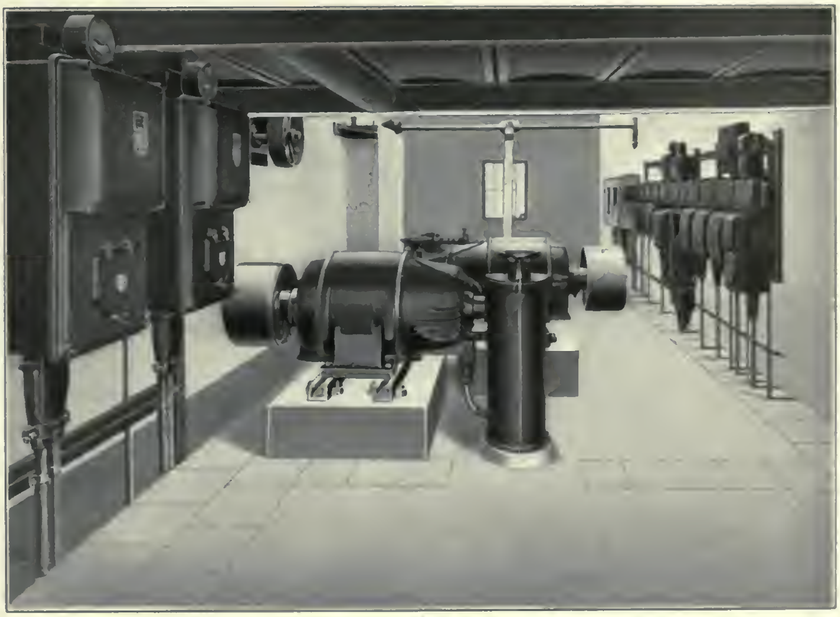
During 1915 manufacturing started and before the end of that year the first motors were delivered. Where the manufacturing of a new article even in ordinary times, of course, is connected with considerable trouble, almost unsurmountable difficulties had to be overcome during these times where no one knew what was to happen the next day, materials were nearly unobtainable and labour conditions were most unstable. However the fight was carried through with success. Never losing sight of the necessity to



Total floor space for offices and factory.

Winding room for small motors.

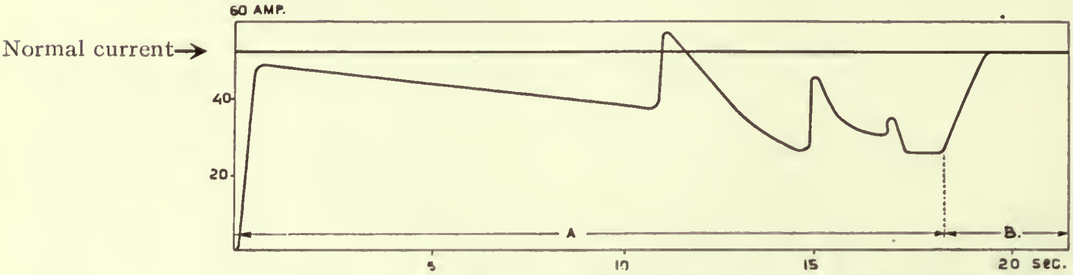
only deliver first class motors and generators, the motor department developed itself continually and obtained a good reputation for her products. Even where it sometimes became necessary to use some substitute materials, these were selected with great care so that full responsibility for the proper functioning of the motors could be taken. The fundamental idea was not only to be a war concern but to develop the product so, that even after the war, the motor department should be able to hold its own in competition with foreign manufacturers. The most modern machinetools for quantity manufacturing were installed and inspection by means of calibers and special tools carried through into details whereby interchangeability of parts was obtained. Nothing was left undone that could contribute to the perfectioning of the product.



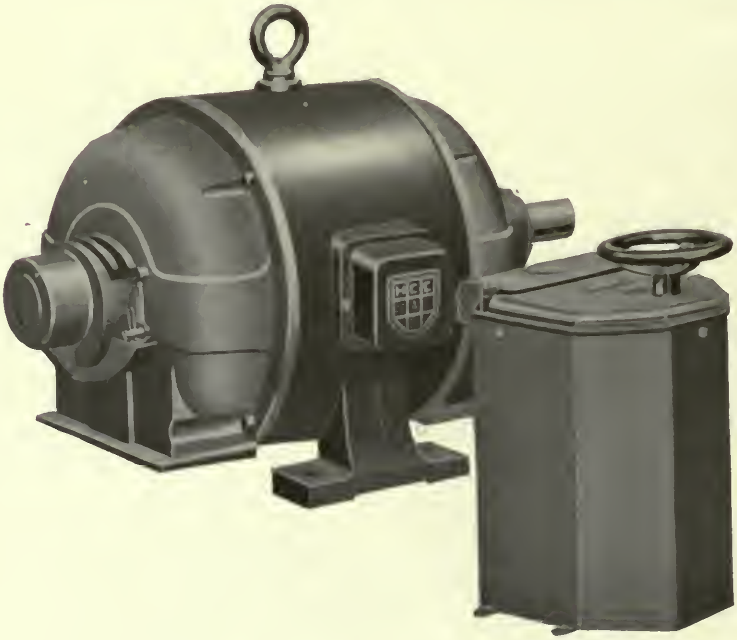
Engine room basement with motors and battery cases installed by Heemaf.

Now that the war is over and the world is returning to more normal conditions the Heemaf has found, that the hard work of the war years has not been done in vain and that the product compares favourably in regard to quality, price and delivery with the product of foreign companies. The proof of the pudding is in the eating, and this proof has succeeded to the advantage of her customers and of the Heemaf. The further successfull development of the concern may be expected with the fullest confidence.

The "Heemaf" now has an authorized capatalization of / 10.000.000.— of which / 6.750.000 is outstanding. The total floorspace, used for manufacturing and offices, amounts to 28500 M² The outputs during the bookyear 1920-21 amounted to a value of / 10.000.000.



Gurve showing starting current of S. K. A. motor 20 H.P. driving a ventilator. (A = starting period).



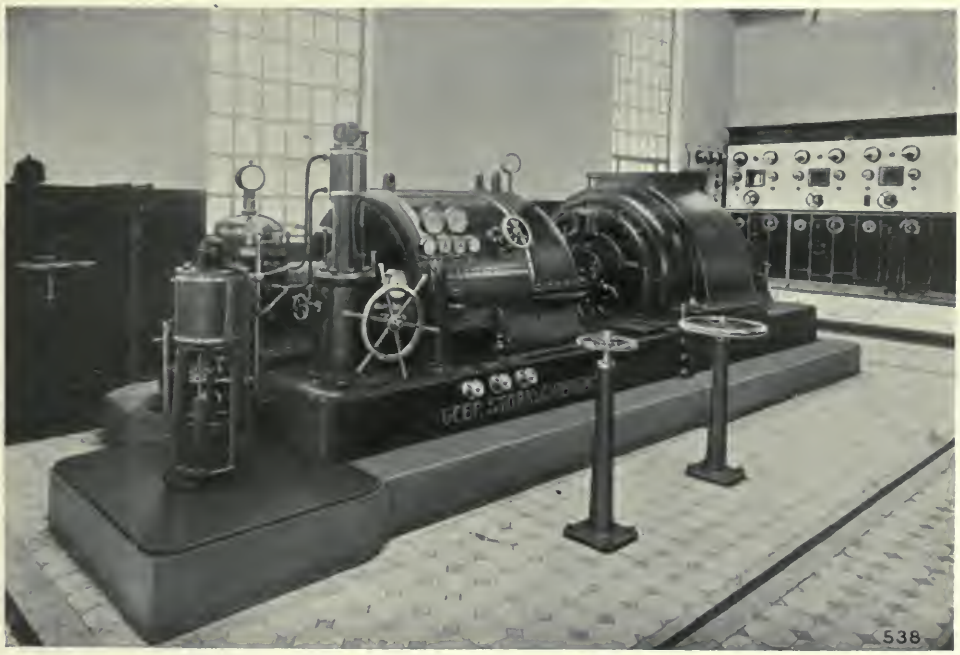
The new Heemaf S. K. A. motor, with special short-circuited motor.

Stork Brothers & Co. Ltd. Engineering Works Hengelo (O.) Holland

The Dutch Engineering Trade has a worldwide reputation for the quality and workmanship of its products notwithstanding the fact that the principal raw material, namely: ironore, is nowhere to be found in any part of the country.

One of the centres of Dutch industry is situated in the county of Twenthe with a great number of cotton spinning, weaving, bleaching, dyeing and printing works and in which county are also to be found several Engineering works amongst which some of the largest in the country. Several of the latter have grown from small repairing shops to huge concerns and as an example of these we mention the Engineering Works of Messrs. Stork Bros. Ltd. which was founded in Borne, near Hengelo, in 1859 and was moved to Hengelo in 1868; from a small foundry it has now become one of the largest works in Holland occupying a foremost position and employing about 2500 men.

These works have constantly been enlarged in the course of the last 20 or 30 years and now consist of various extensive buildings such as foundry, boiler shop, pattern shop, machine shop, erection hall a. s. o. The area covered in 1900 was about 3 acres and now amounts to 12 acres of land. The number of staff and hands increased threefold since 1900; wages to the amount of nearly three millions of guilders are paid annually and 6000 tons of coal are consumed every year; these figures will give an idea of the magnitude of these works.

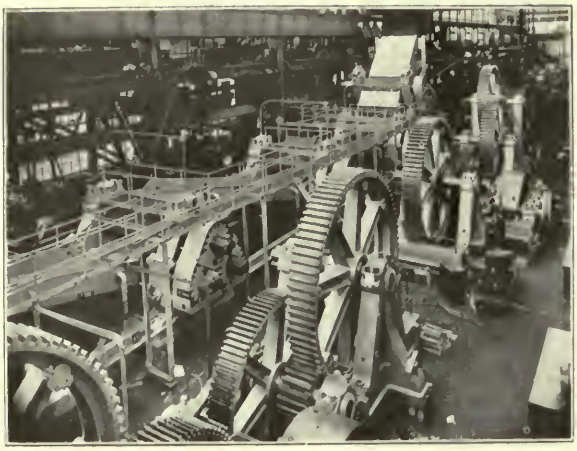


Zoelly Steam Turbine-Generator erected in the Power-plant of the "Oranje-Nassau" Coal-mine.

In the various departments of the works different kinds of machinery are being manufactured.

For many years the firm has had a wide reputation for their steamengines both for land and for marine use; specially known are their *uniflow steam engines* which are built for every capacity. Marine Steam Engines have been supplied to over 350 vessels with a total capacity of 90.000 Horsepower.

In the year 1905 a department was erected for the construction of Zoelly Patent *steam turbines,* which have been supplied to a great number of Municipal and Government



Sugar-mill and Crusher built for the Sugar Works "Tjomal" at Java.

Power Works both in Holland and in the Dutch Colonies and also to many industrial concerns and for special purposes such as for lighting ships. Recently the Turbine Department has made a specialty of turbines with gearing reduction for seagoing vessels.

Up till the beginning of 1922 136 turbines have been delivered with a total capacity of 335.282 effective Horsepower; most of these have been fitted up with condensation plants which have also been made entirely by the firm.

Besides steam turbines the firm has recently taken up the manufacture of water turbines according to the patents of Charmilles at Geneva.

One of the most important departments is that of the Centrifugal Pumps and Srew Pumps which are made in all sizes and for all purposes. The firm takes a unique place in Holland for their drainage pumps of which more than 100 have been supplied to different Polders in the low countries. One of the largest contracts for pumps ever executed by the firm has been for the supply of three Stork Screw Pumps for the electrically driven power plant "Electra" which provides for the drainage of the whole county of Groningen and of a part of the county of Drenthe in the North of the Netherlands. These three pumps have an output of 200.000 gallons per minute *each* and may be considered to be the largest pumps in Holland.

Small centrifugal pumps are being manufactured in series in a separate building which has been fitted out specially for the export trade; about 1000 pumps are being made annually.

Besides the above the works turn out a great number of *compressors* and *ventilators.*

Steam Boilers. The boiler shop has been supplied with the most modern and heavy machinery for the manufacture of Cornish, Lancashire, Elephant and Marine Boilers a. s. o. of all sizes. As licencees of the well known firm of Babcock & Wilcox, Ltd. of London, the firm manufactures their patent Watertube Boilers for Holland and the colonies. Many installations have been supplied both for stationary plants and for

Portal Jib Cranes erected in the Yard of the Hoisting- and Conveying-Machinery Department.

marine use, most of which with mechanical draught of a special design made by Stork Brothers. Over 3700 steam boilers with abt. 3.700.000 square feet of heating surface have been supplied besides a great number of superheaters, tanks and many apparatus for chemical industries.

Sugar Machinery. Complete plants for sugar works and refineries have been supplied and fitted up in many parts of Java, Cuba, Egypt, Brazil and Mexico and the reputation enjoyed by the firm for this class of machinery is second to none.

Gearing and transmissions are also made in series in a separate shop and specially for export; many cotton spinning and weaving mills make exclusive use of Stork Brothers gearing.

Electric cranes and lifting machinery. This department supplies hoisting and conveying machinery of every class and description. On the accompanying photo we show a series of electrical cranes, forming part of an order of 34 Portal Jib Cranes for the Colonial Office for use in the Dutch Colonies.

Foundry. The foundry of modern construction and provided with all up to date appliances supplies the different departments with the necessary castings and has a capacity of about 60 tons a day.

"Conrad-Straat" in the Garden-Village.

The firm of Stork Brothers Limited has been one of the first to provide institutions for the welfare of their workpeople and ever since the foundation of the firm it has been the aim of the management to raise the social and intellectual position of their employees.

For this purpose there has been formed a "Society for the welfare of the employees of Stork Brothers Limited" of which every employee must become a member; the capital of this society now stands at over 3.000.000,— of guilders. The Society comprises amongst others:

A Sick- and Pension-Fund with a capital of *f* 900.000,—.

An Invalid- Widow- and Orphan-Fund with a capital of *f* 1.800.000,—.

A Saving-Fund with a total of saved money of *f* 500.000,—.

A Study-Fund for needy young people of both sexes, showing prominent talents for art or science.

Shares of small nominal value have been created enabling the employees to take part in the capital of the firm; 4000 of these shares of 100 guilders each have so far been taken up.

The staff and the workpeople elect a representative body consisting of about 40 workmen and office employees taken from the various departments. All important questions concerning the works or the staff are considered and discussed by this representative body together with the management.

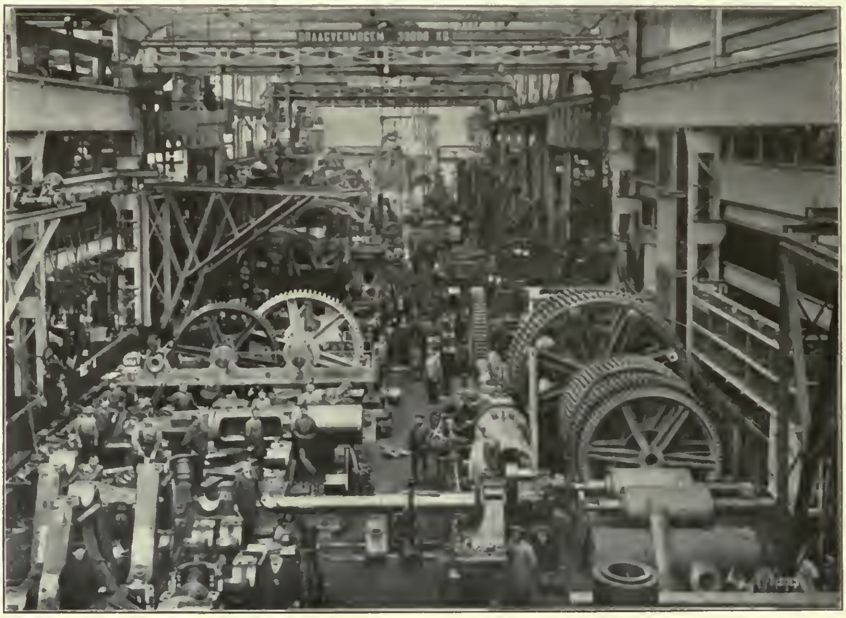
The payment of wages is based upon a combination of piece-wages and co-partnership. All hands have a share in the profits made; the amount of this depends upon the dividend paid and upon the amount of the wages earned by each member during the year. Questions concerning the tariff of wages are decided by committees elected by and out of the midst of the workmen in each department.

A matter of special care has been the technical education of the employees; the firm has recently built a large and commodious school with all modern improvements and all boys from 14 to 19 years are obliged to follow the lessons given at this school consisting of a repetition of what has been taught in the lower forms and a course of technical lessons. These lessons are given during working hours (from 4 to 9 hours a week) and during evening hours. In summer the evening classes are substituted by sport and open air play. The number of boys attending these lessons amounts to about 500.

In close proximity to the works a club building has been erected being a present of the firm on the 25th anniversary of the firm in 1893. This building has a large hall for meetings and shows offering seats for 800 people, besides a coffee-room, a public library and several recreation rooms for holding lectures by members of the management and of the staff.

A bath house with modern equipments and two holiday resorts, one at the seaside and one in the country, have also been provided.

A garden village with 450 dwellings and occupying about 90 acres provides suitable and healthy dwellings in a rustic neighourhood. The streets are from 10 to 13 yards wide and most of the houses have front gardens from 5 to 7 yards long, while at the back of each house is a garden with a length of 15 to 20 yards. In the centre of the village garden a market place will be found surrounded by shops and a hotel with restaurant with all latest improvements. The number of inhabitants is about 1800 and consists both of working men and employees.



View in the Work-Shop.

Van Berkel's Patent (Slicing machine) Company, Rotterdam

BERKEL

When the manufacture of a practical article, begun in modest fashion with a couple of workmen, grows in the short span of five and twenty years into a great industry, employing some thousand hands and with a turnover of more than ten million guilders, there must be something very special about it to promote such a large sale, the more so when it is exposed to serious competition on the world's markets. This assertion is fully applicable to the meat slicing machine bearing the name of its inventor and maker van Berkel, which by force of its superior qualities and the intensive organisation of its sale has arrived at the point where front rank is undisputed, and when in 1919 this machine was followed by van Berkel's automatic scales the two together procured for themselves a world wide reputation, which is the more remarkable that it has been achieved in a period of general trade depression.

If we look more closely into the reasons for this success, we notice in the first place the principles adhered to in the two factories of slicing machines and weighing machines at Rotterdam and those in London, Berlin and Chicago. The mass production of one or two articles renders a concentration on standardisation of all parts of the machines possible, and the practical utility of the product is a matter of constant care and attention. These matters are immediately apparent on even a cursory inspection of the works in Rotterdam.

A system of strict inspection is practised, not only of the raw materials, or half manufactured materials, to be employed, but is repeated again and again, so that the purchaser is guaranteed the utility and durability of the machine he buys.

Economic production is secured by the control of technical inspection, which fixes the normal time needed to finish each part of the work. Every section of the factory has its inspector, who is responsible for the perfection of each piece of work done in his section, on rejection of any such the workman is liable to lose so much "time" from his wages.

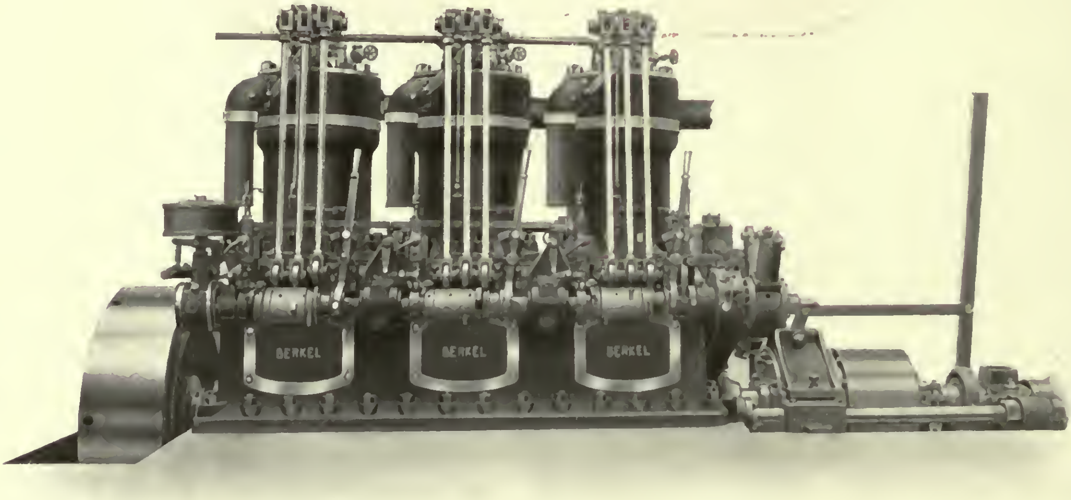
A chemical laboratory examines materials and finished parts both chemically and microscopically with the greatest accuracy.

Of course the mechanism of such intricate machines as these of van Berkel needs the greatest care. The scales are guaranteed accurate to a fraction of a gram, and as to the slicers, we need only say, that many of them are still working perfectly after twenty five years of use.

The finishing off and external appearance of these machines has due attention paid to it, so that we are not saying too much when we assert, that both slicers and scales when sent out to all parts of the world are perfect in construction and exterior.

For the slicers there is a special factory devoted to making, sharpening and polishing the wonderful circular knives, which are one of the secrets of the success of van Berkel's patent slicers. One of the Rotterdam works is exclusively employed in turning out slicing machines for England and the British Dominions.

Encouraged by its success in the above machines, the Management of the Company has ventured on an entirely new branch for its industry. This is the crude oil engines department housed in the second van Berkel's works at the Keileweg, Rotterdam. Six types have been introduced at present, 8, 20, 40, 30, 60 and 90 H.P. The main characteristics of the particular kind of engines manufactured are: the fact that the engine runs at a very low number of revolutions per minute and that the materials used in its construction are of the very best quality and finish. Through the slow speed at which these engines run the greatest efficiency is obtained from the propeller, or at the driving pulley. These characteristics have resulted in an increasing number of orders.



Berkel 3 cylinder Motor

We now turn to the second cause of the success of the van Berkel's Patent (Slicing Machine) Company. Level with the painstaking manufacture of the articles is the vigorous system of sales management. This sales organisation is carried out by a staff of excellent, highly trained men both at home and abroad, who have made van Berkel's slicers and scales a household word in every country and in every part of every country.

In extension of this system, affiliated companies have been established: for Scandinavia at Copenhagen, for France at Paris, for Spain at Madrid, for Switzerland at Zurich and for South America at Buenos Aires. These companies are independently constituted, the Rotterdam Company acting as "holding company." The factories at Chicago, London and Berlin have their own managements. It is scarcely necessary to say how great must be the influence on methods of production of such an organisation emanating from one centre. Provided with plenty of experience, the technical experts can readily turn out every variety of design suited to each country of destination. In this connection we may mention the experimental department in Rotterdam, where the experts are ceaselessly at work seeking to make improvements one xisting types, or studying designs for new ones. Among the newest inventions is a slicing machine (with electric power) with an automatic catcher, which goes on slicing and neatly piling up the slices without any attention. In hotels and large institutions this has proved a great success and will soon be regarded as indispensable.

The automatic scales were speedily introduced and sold by the thousand in the first year of their existence already.

The van Berkel Company extended its sphere of influence in yet another direction. In order to provide the great stores, hotels, etc. with other machines useful in handling large quantities of provisions the Company formed an alliance with a big American concern and the "Hobart-Berkel Mfg. Co." (established in 1920) appeared, in consequence of which a market was immediately found in Europe for electric meatchoppers, mixing machines, coffee mills, etc. and, with van Berkel's reputation as an introduction has prospered exceedingly.

A second combination was that with the largest makers of weighing scales in America, the Toledo, so that we now have the "Toledo-Berkel Co." The object being to supply not only shops, but also factories, transport concerns and suchlike with automatic scales of great capacity (to a maximum of 6000 kgs.). This Company now has its agencies in numerous countries.

After reading the above short sketch of the rapid rise of this business, it will not cause surprise to learn that the Company has increased its capital from one to 7½ million guilders. The speedy increase in the turnover has been proportionately large. In the last five years it has been more than tripled, in Holland, England and America, and that only reckoning the slicers and scales.

We need scarcely add, that with such an extensive export and the demands of modern transport, the factories are provided with every means of promoting quick despatch. The Company has its own tool works, carpenter's shops, stores with spare parts and every convenience for executing orders rapidly and accurately.

A large staff of engineers and technical experts directs a carefully selected and trained corps of workmen, so that, notwithstanding the speed of the work, everything is done thoroughly and efficiently, true to the Company's slogan: quality and finish. Experience proves, that no country in the world remains insensible to the dominating force exercised by a production on this principle.

BERKEL

Engineering Works "De Etna", Amsterdam

Among the engineering works, which occupy a peculiar position on account of the specialization they have practised, are the Engineering Works "De Etna", established in 1908 in Amsterdam, absorbing the firm of B. W. H. Schmidt & Co., which had been in existence for thirty years.

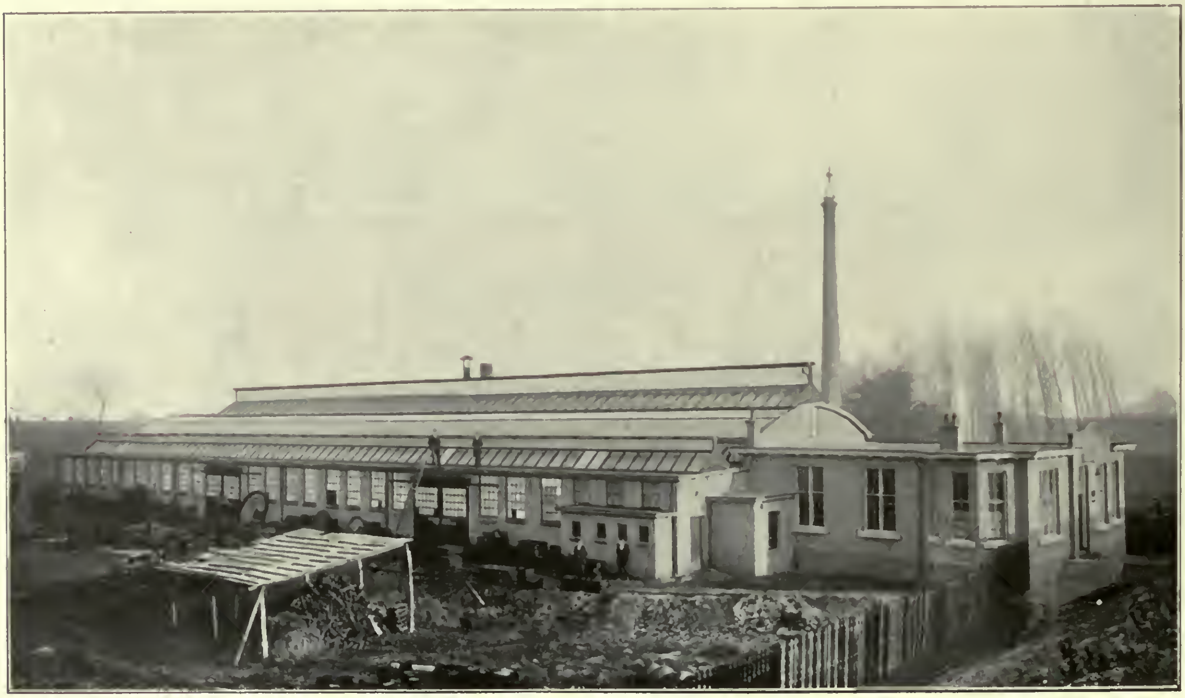
Subsequently the iron foundry at Tiel was acquired, and the Company itself completely equipped to supply machinery to the cocoa and chocolate industry. Hydraulic presses for various purposes were also taken in hand, running to the highest possible pressures. Machinery for rubber factories is another speciality of the "Etna" Works.

The Company employs about 200 men and as the work is limited to machinery for special purposes, it has its own particular stamp. In the cocoa industry, for instance, most machines in use are of a similar type, but those of the "Etna" have a character of their own and possess special advantages.

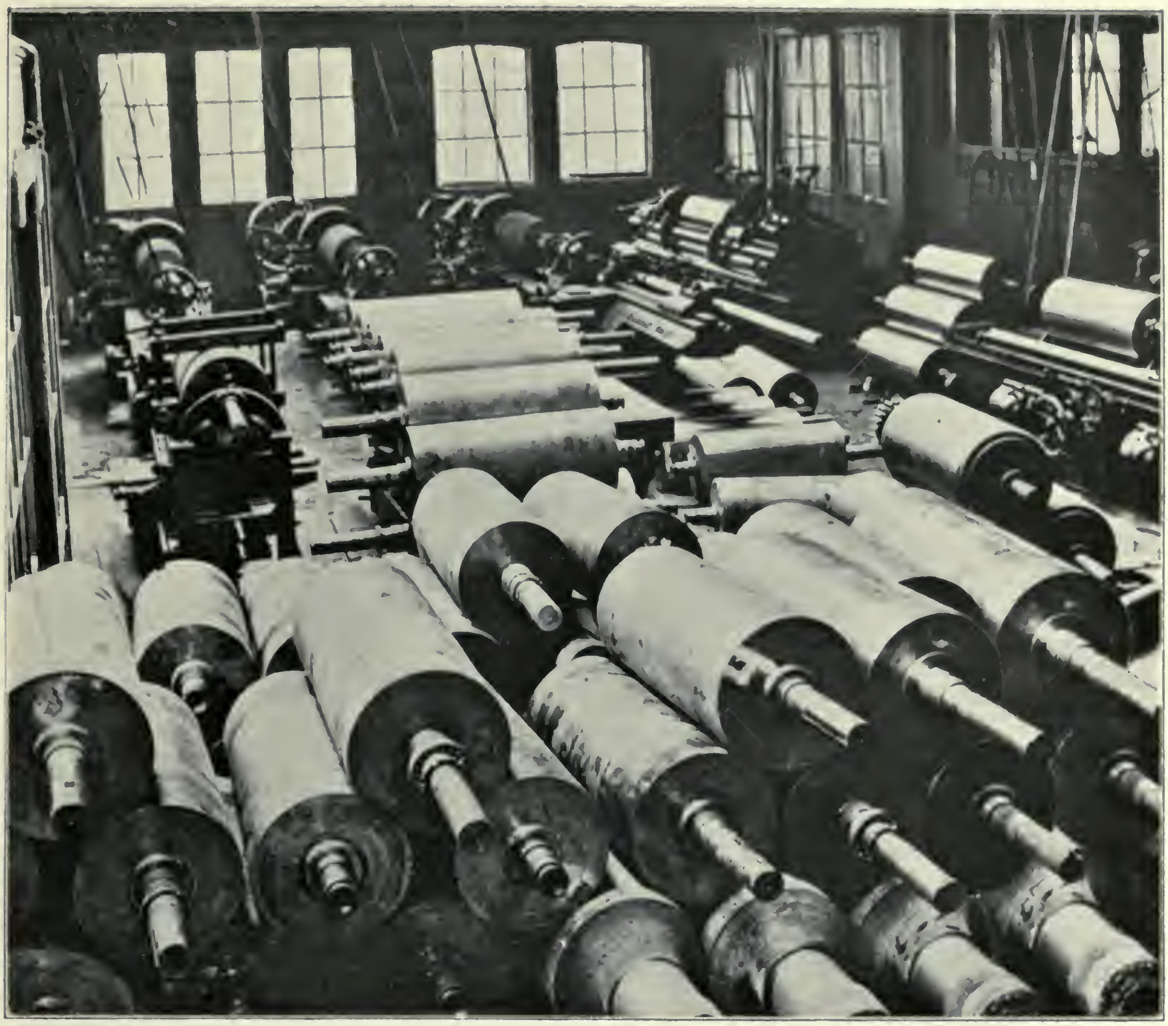
The ownership of the foundry at Tiel provides a guarantee for the quality of the material used. Another consequence of the specialization is, that a plentiful supply of spare parts is kept in stock and can be supplied at short notice.

The system of the division of labour in practice bears a certain likeness to the Taylor system, and is entirely calculated to promote production to the highest possible degree, without raising the costs. An efficient testing department forms part of the organisation.

The results of such a carefully planned working system have not failed to show themselves; no less than 80 per cent of the product of the "Etna" is sent abroad, particularly to England, France, Italy, Belgium, Scandinavia and Canada. Among the Company's customers are the famous Hayes Cocoa Works of London, the Watford Cocoa & Chocolate Works, Rowntree of York, etc. One of the largest orders was from the C. W. S. (Choco-



Foundry at Tiel.



Part of the interior of the Etna Works.

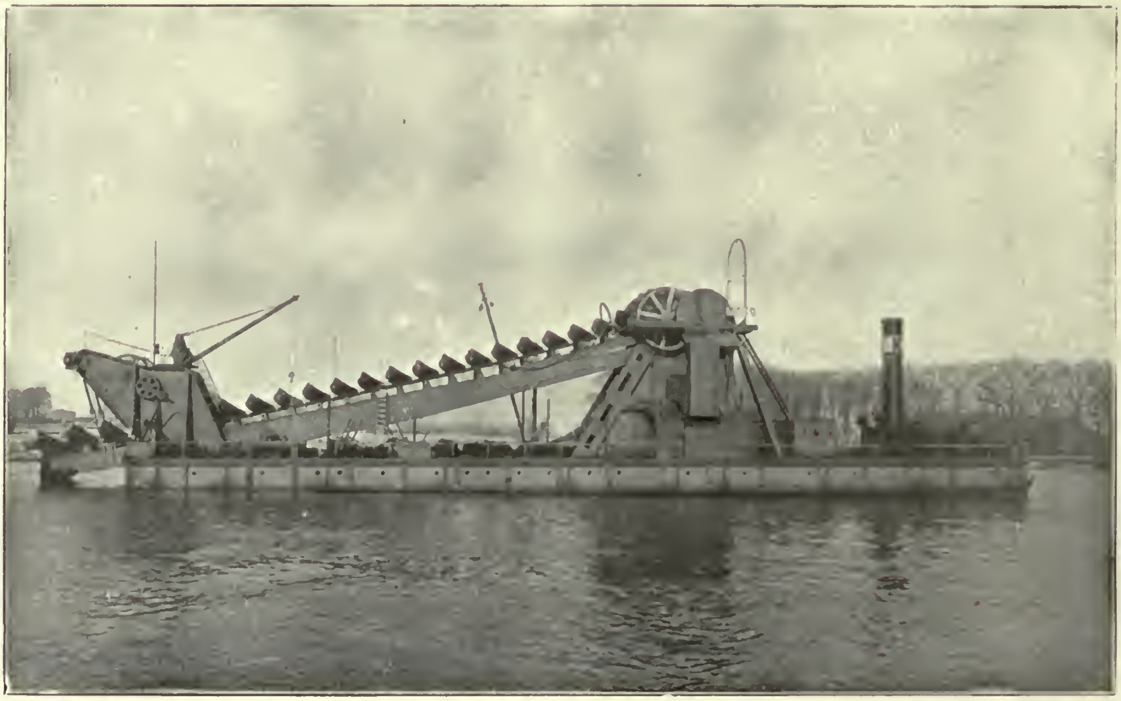
late & Cocoa Works of the Co-op. Wholesale Society of Luton in England), to whom the "Etna" supplied 24 triple mills, 12 twelve-pot cocoa presses, 23 roller refiners, one conche battery with 66 pots, 24 dipping tables, 12 roasters, and a pulverising plant with a capacity of 10 tons a day. Machines of the largest existing dimensions are mostly constructed. The biggest cocoa press made by the "Etna" exerts a pressure of 1½ million KG. (1500 tons.)

Besides the above the "Etna" supplies sifting, cleaning- and sorting machinery, which is partly made of wood. Mixing-, grinding- and crushing machines for similar industries are also made in the Tiel Works.

The illustration of the interior of the Works give some impression of the mass production carried on, which makes it possible to supply even complicated and extensive orders from stock, (extreme care and accuracy of finish guaranteeing to the buyer), machines suitable for highest grades of work and largest outputs.

W. J. Kalis Wzn. & Co's Baggermaatschappij Dredging Contractors, The Hague

The struggle with the water and the situation of the country at the estuaries of great European rivers have stamped upon Holland and its industries certain peculiarities as regards shipping and hydraulic engineering. The thoroughness of its workers and their work has secured for products exported from Holland recognition in every quarter of the globe and even historical celebrity. Thus also the work executed by Dutch dredging contractors has made a special name, not only on account of the excellent material used but also as personal achievement. It is a curious fact that the locality of Sliedrecht has almost monopolised this industry to itself, so that at one time there was a saying in Holland: "False coin, German women and Sliedrechters are to be found everywhere"!



Stationary bucket dredger, capacity 1200 tons per hour.

The engineers concerned with dredging have kept pace with modern technical progress and adapted their machinery to the most exacting demands, so that Dutch dredging plant is seen at work all over the world.

The limited company "W. J. Kalis Wzn. & Co's Baggermaatschappij (Dredging Company)" at the Hague was started only four years ago, with a capital of fl. 1 million, which capital has meanwile been raised up to fl. 10 million. The activities of the Company are limited to dredging only, but it works when necessary in combination with engineering firms and has already executed numerous foreign orders by means of its extremely up-to-date equipment of dredging apparatus.

No less than 15 different tasks were fulfilled in Denmark alone and there were others in Sweden and Ireland. In Venice a canal had to be excavated for industrial purposes and Kalis' company has undertaken to shift 4 million cubic metres of soil. The growth of business in Italy has induced the Company to create a subsidiary company at Rome, the "Sindacato Italiano Costruzioni Appalti Marittimi", called for short "Sicam".

In the spring of 1920 the firm of K. L. Kalis Wzn. & Co. of Sliedrecht was amalgamated with the above named company. The amalgamation with this firm, having a well-deserved reputation all over the world on account of a long series of dredging works executed during an activity of over a century, added to the fleet of the company a great number of modern and strong dredgers of different types.

The yards of the Company are at Dordrecht and in the vicinity of this town, whence are sent out dredgers, sand-suckers, barges, cutters, hoppers and elevators to every part of the world, while floating workshops, floating cranes and houseboats provide all that is needed in the way of repairs and lodging in any distant locality where work is being done.

Stationary suction cutter and barge unloading dredger, capacity 6000 tons per hour.

A short summary of the various types of machines in use throws a clear light on this interesting industry.

There are *dredgers* of all sizes up to 52 by 10 metres, in which the ladder carries 35 to 47 buckets cast in steel, weighing over 2 tons and containing 1000 litres each. For use in stony or chalk soil these buckets are made stronger and smaller, 250 litres contents. Thus at Copenhagen chalk could be excavated, at Malmö stone and at Helsingborg slate.

The *suction dredgers* mix the material they have to handle with water and force the mixture through pipes, even to a distance of 2000 metres from the place they are dredging. These suction dredgers have engines of between 1500 and 300 H.P.

The *profile sucker* sucks the dredgings up into barges lying alongside; while the profile and barge-emptying suction dredger is a combination of the two methods.

The *cutter* is run on an entirely different system. The stuff to be handled is cut into pieces by mechanical knives, there are about five of them and they are 2 metreslong, 30 centim. wide and 8 centim. thick: under the rotating shaft to which these knives are affixed there is a suction pipe, which at once sucks up the loosened material and pumps it into the floating pipes, which are laid to the desired dumping ground.

The *hoppers* travel under their own steam and are mostly used for dredging river estuaries: they suck up the mud and store it in their hold, carry it out to sea and get rid of it there, trough their bottom doors.

Finally, there are *elevators.* These are built on two pontoons, between which the barges filled with dredgings are towed and then two rows of buckets scoop up the stuff and turn it into shoots whence it falls wherever they may be directed.

The *selfdischarging barge* is the most usual means of transport for taking dredgings out to sea, the bottom doors, to which chains are attached, are there pulled open and by this means 300 cubic metres of stuff can be shot into the sea in one minute and a half.

River-tug of 200 H.P.

The Company also owns a fleet of river and sea-going tug-boats to move its apparatus from place to place, some of them run to 700 I.H.P.

It is unnecessary to state that such a business is in the hands of capable engineers, such as have always been successful in making the name of Holland famous abroad and maintaining the high traditions of Dutch engineering.

Frank Rijsdijk's Shipbreaking Co. Ltd., Hendrik-Ido-Ambacht

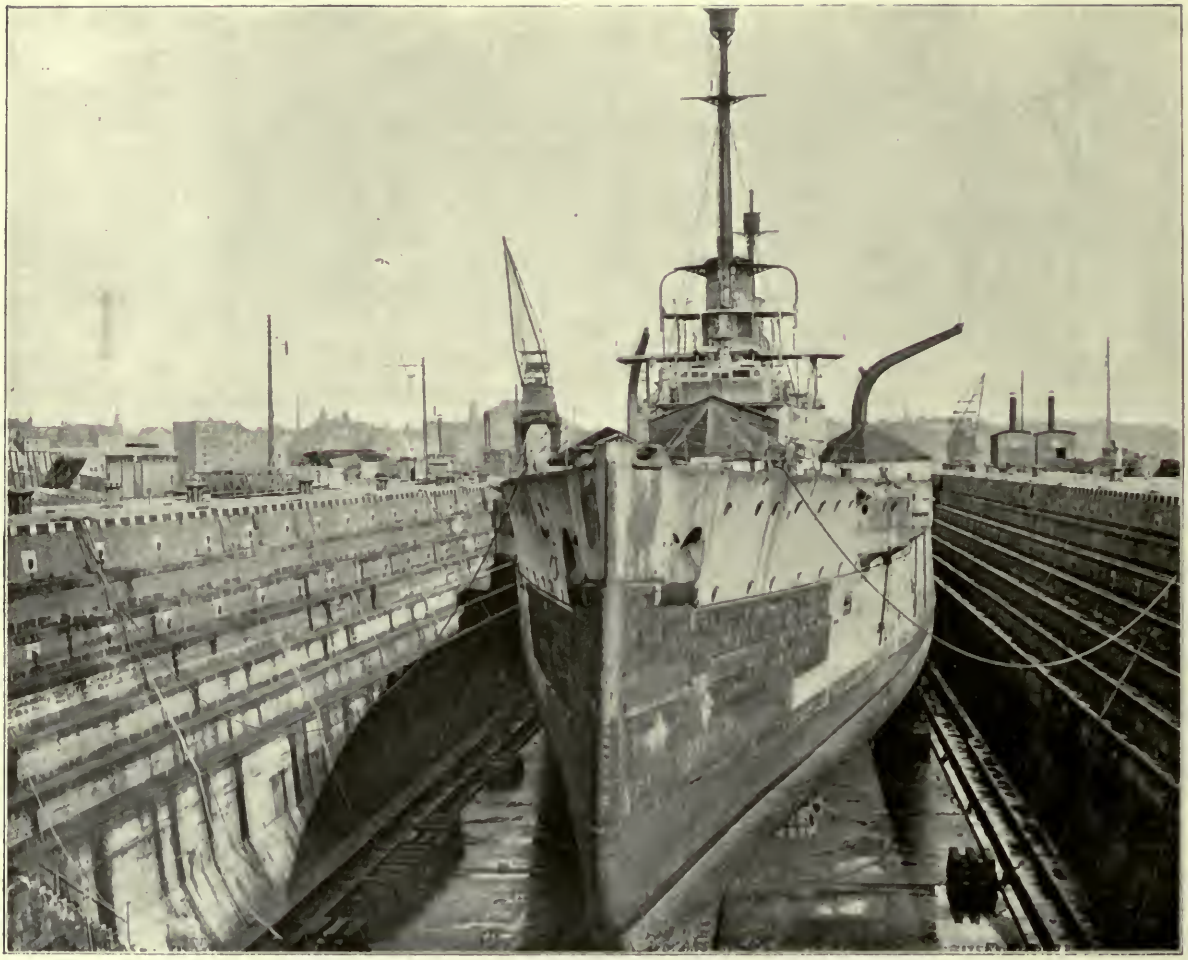
N.V. FRANK
RIJSDIJKS

In the midst of the many slip-ways on the Meuse between Rotterdam and Dordrecht, may be found a remarkable industry on premises at a place called Hendrik-Ido-Ambacht and covering an area of some 47 acres, with the dock-basins adjacent. This is the home of the Shipbreaking business established in 1889 by Frank Rijsdijk, where all kinds of old or irrepairable ships are brought from all parts of the world, whether they have been in the Naval or Merchant Service and there they are taken to pieces, down to the last rivet. This business has been remarkably prosperous since its beginning, which was started in 1889 and now it has grown into a business which does a wholesale trade in spare parts and has become a recognised source of supply for ship-building material. Every day prospective buyers, of many nationalities, may be seen choosing from among the engines, boilers, motors, pipes, iron and steel, plate etc. what they can make use of.

Some idea of the value of the material changing hands in this business may be obtained, when one knows that in the first twenty five years of its existence, this ship-breaking yard broke up 20 sailing ships, 48 steamers and 47 war-ships, representing a total displacement of 212.000 tons. The War brought in an extraordinary supply of irrepairably damaged or obsolete naval vessels, so that in the years 1918—1921 no less than fifteen men-of-war were broken up comprising a tonnage of 135,400 tons and which had cost more than fl. 100 million to build. The total number of warships broken up at Hendrik-Ido-Ambacht since the business began is: 19 Dutch, 18 English, 12 French, 7 German, 3 Spanish, 2 American, 1 Danish.

Of course works of these dimensions are not without modern and powerful equipment needed for dismantling, breaking up and transporting the material. Three hundred and fifty men are regularly employed. It is not always possible to do the work always in the place itself, for instance such great war-ships such as the "Rheinland" the "Oldenburg", the "King Alfred" and the "Charles Martel" has to be reduced in size in the New Waterway, until their dimensions would permit them to pass under the Meuse Bridge at Rotterdam. For such work the Company has at its disposal several floating cranes, the biggest of which is taller than the "White House" at

View of one of the shipbreaking yards showing the 200 tons floating-crane alongside an obsolete battleship.



The ex-German battleship "Rheinland" (18,000 tons) in dock and now broken up by Frank Rijsdijk's Shipbreaking Co. Ltd.

Rotterdam and can lift 200 tons; the pontoon of this crane offers lodging to the men employed in the work on hand. These floating cranes vary in capacity from 15 to 200 tons and are often let out on hire to shipbuilders and engineering works; some have been sold abroad where they are valued for their strong construction.

A ship having been dismantled and sent to the breaking up yard is moored alongside the buoys and the real breaking up begins with hammers and still more with the oxygen flame. There is a strong oxygen making plant on the premises, so as to ensure a regular supply. When this oxygen flame is insufficient, an instrument called "the executioner" is used; this is an iron weight of 5000 KG. which is raised to a height of 30 metres and then dropped so that armour plate of 42 centimetres in diametre and 30.000 kgs. in weight is broken. A smaller kind of "executioner" is used for other parts, electric shears cut through iron plates 12 centim. thick, in short everything is reduced to such a size that it will go into the melting furnaces and thus provide material for new castings. In order to lift the heavier pieces there are travelling cranes and the iron magnet, which holds 3000 kgs. of iron at once; iron borings and shavings are easily handled by this method. Finally the iron skeleton of the ship is towed to the bank and stranded there.

Such an excellently equipped establishment as Rijsdijk's naturally does not need to limit its activities to its own premises or country: when the British battle-ship "Anson" had to be broken up within the English frontiers, the company sent a crew of 100 of his ship-breakers, with a vessel on which they lodged, and transported vessels with equipment to the Medway and within a twelvemonth the huge ship had ceased to exist.

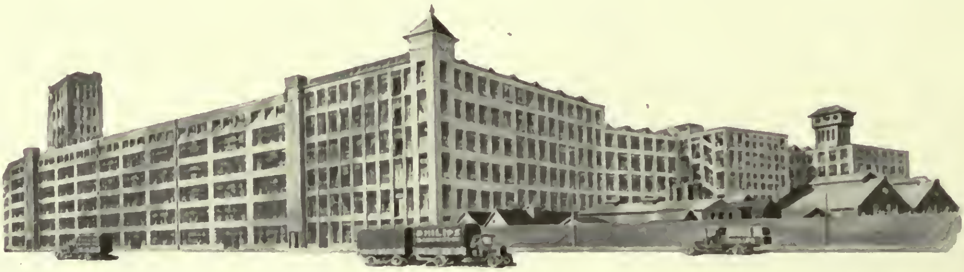
The enormous value of the engine parts and the boilers in the possession of the ship-breaking Company is seen in the figures: up to 1914 215.000 H.P. passed through the books and after 1914 195.000 H.P. Thus there may be seen among the mountains of iron scrap at Hendrik-Ido-Ambacht a varied choice in ship's machinery, cylinders, motors, boilers, winches, radiators, screws, flame pipes, cables, anchors and such like. The interior parts and decorations of the vessels are also collected together, so that one also sees heaps of wood and brass-work, deck cabins and saloon wainscots, Captain's bridges and steering wheels.

The after effects of the War and developments in shipbuilding of late years seem as if they would send a never ending stream of work to the breakers, and although their occupation seems a destructive one, in reality they are providing immense quantities of new material for new construction, the more valuable while the production of raw metals remains poor and dear. The lively trade in second hand parts for ships proves of itself how much such an industry as that described in these lines provides in a need of the times.

The "Oldenburg" built 1911, broken up 1921 (22,500 tons).

Philips' Glowlampworks Ltd., Eindhoven

It would be ridiculous to publish a standard work on Modern Holland, with a general review of its comparatively youthful industries as an important supplement, if one did not give precedence to the Dutch incandescent lamp factories at Eindhoven, created by and bearing the name of the Philips Brothers. For if Holland desires to make any impression on foreign countries as to its achievments in industrial affairs and as to the possibilities which Dutch initiative has already opened up for itself, the Eindhoven incandescent lamp works and a few other great industries must be cited to prove how a small country may be capable of great things in many ways.



Philips' Glowlampworks Ltd., Eindhoven, Holland.
Total area, 57000 M².

One can quote no better example of the truth of the well known maxim of Emil Rathenau, than the success of the Brothers Philips. That maxim tells us, that in great industries stagnation is decay, for no stagnation exists in the pioneer knowledge of natural forces and powers; neither does it exist because there are no tools thought of by man, which cannot be made: finally also, because modern economic life would not permit any stagnation.

The two brothers Philips, the one as creative spirit, the other as a commercial genius, compose a firm which in the course of a single generation has built up an entirely new industry in Holland and made it such an organisation, that in every respect this Dutch incandescent lamp factory will stand comparison with any of the most famous foreign industries.

In the manufacture of this small but important article for producing artificial light, it has been shown how well conceived and liberally applied labour methods, supported by all the genius of the newest technical inventions, can make a business undertaking an ornament to a country's industrial life. Thus we perceive, it is not merely a matter of offering the buying public abroad an article of competitive value both as regards quality and price, but attention is given to ensure care being paid to every detail of the work on this mass product by factory employees of both sexes, numbering in 1921 some 6000 hands. Moreover, it is to be noted, how a model industry has been organised at Eindhoven, which as regards the welfare of the working people may also stand any comparison with such matters as practised in other countries.

Philips' undertaking was begun about thirty years ago, on an extremely modest scale in that Brabant town of Eindhoven, which only half a century back was a small place of little importance. Repeated extensions soon brought the Philips' works into prominence as manufacturing a mass product, which speedily found its markets far beyond the limits of our frontiers and spread its name all over Europe. The installation of machinery with the newest improvements and the finest appliances for the accurate work in this industry, supplemented by various inventions of the technical head of the firm (who some years ago received the honorary degree of "doctor" at the Technical University of Delft), and then the sale of the article itself in incredible quantities through the business ability of the commercial partner, — all these elements contributed to the rapid growth of the industry. The efforts of the brothers Philips to this end have never relaxed.

On arriving by train from Amsterdam in the north, or from Maastricht in the south, one sees the massive factory buildings rising in the midst of the flourishing city of new Eindhoven and in the year 1920-1921 a new group has been added to them, half as big again as the older ones, and with its six stories putting the old, original main building entirely in the shade.

In 1912 the business, which hitherto had been more of a family affair than anything else, was converted into a limited company. From that time onwards the industry rose to fresh heights.

It is impossible in the short space at disposal to give a full description of this complicated industry, for there is perhaps no second mass product in the world, which makes greater demands on the manufacturer than this, in order to carry it out in perfection. In the factory building one sees the lifts going up and down, the glowing fires in the furnaces, the mighty air pumps add their deep tones to the thunder of the engine rooms, in the workshops the men are to be seen at their lathes of many ingenious varieties and in the enormous, beautifully lighted halls, 500 feet in length, one story piled on the other, one may see thousands of girls at work with agile fingers handling the fine wires, serving the newest machines with a speed and accuracy, such as is necessary to produce infallible results in an article such as these lamps, in the making of which hand-work is an element of great importance.

But perhaps of all the processes employed the experimental laboratory is the most interesting. Here a large staff of physicists, chemists and mechanics is employed testing the articles before delivery and continually seeking for new processes and methods and materials by means of which Philips' lamps may reach to new marvels of scientific and technical perfection. Thus for example, the ½ Watt or the Arga lamp was filled with a certain gas, extracted from the atmosphere, a gas, which had been reduced to the purest chemical form as a result of the ceaseless investigations of the scientists in the laboratories of the Philips' factory, which would do credit to any University, so excellently are they equipped. Then there is the form of the incandescent body itself in its absolutely perfect spiralization and finally the wire itself only perfected after years of experiment, and these are the three chief factors which contribute to produce a lamp giving a maximum of light with a minimum consumption of current.

Another department, but really quite a different industry, are the glass-works where all the globes are made for the millions of lamps in all sizes and for all the glass appliances. In creating this branch the management has been inspired by the consideration of the immense advantages accruing from entire independence from any other industry. Thus have also arisen the gasworks where neon, argon, nitrogen and oxygen gases are manufactured.

Thus the Philips industry developed and by a certain centralisation of the whole, each important sub-section being decentralised as a separate industry, the general system and mass production have been perfected and carried to their present capacity.

The big motor lorries of the company are to be seen carrying the glass globes, etc. from the glass-works to the big factory, and there they are packed with the boxes of finished lamps being sent to the railway, addressed by thousands to every quarter of the globe, with labels and marks on boxes and cases in every known language warning carriers to caution — "With care", "Fragile" — "Glass" and the name "Philips Lamps"!

To obtain some idea of the commercial side of this great undertaking, it is worth while to pay attention to the offices, where the business of buying and selling is administered, transport and insurance is regulated, advertisement campaigns are devised, wages regulated and the social side of this great industry is attended to by a large staff of experts. Indeed in this department one gains a fresh idea of what it means to have created out of a miniature article such as an incandescent lamp a mass product which finds its way all over the earth. With growing astonishment and admiration one notes the prescience with which the need of quantities of raw materials is foreseen and provided for, one admires the ingenuity which found means in war time and in the no less trying years which have followed, by which production might still be carried on and competitors faced. Almost insuperable difficulties had continually to be met and overcome in order to send the goods to the buyers, steamers were bought to carry the lamps to their destination one way or another, so long as they reached their markets!

The work done by the management in the social interests of their employees, from the mostly highly educated scientists to the simplest working girls, is well worth studying also, to confirm the already well known fact, that Philips Brothers and many other employers neglect nothing which can contribute to the welfare of all those working with them in the great Dutch industries.

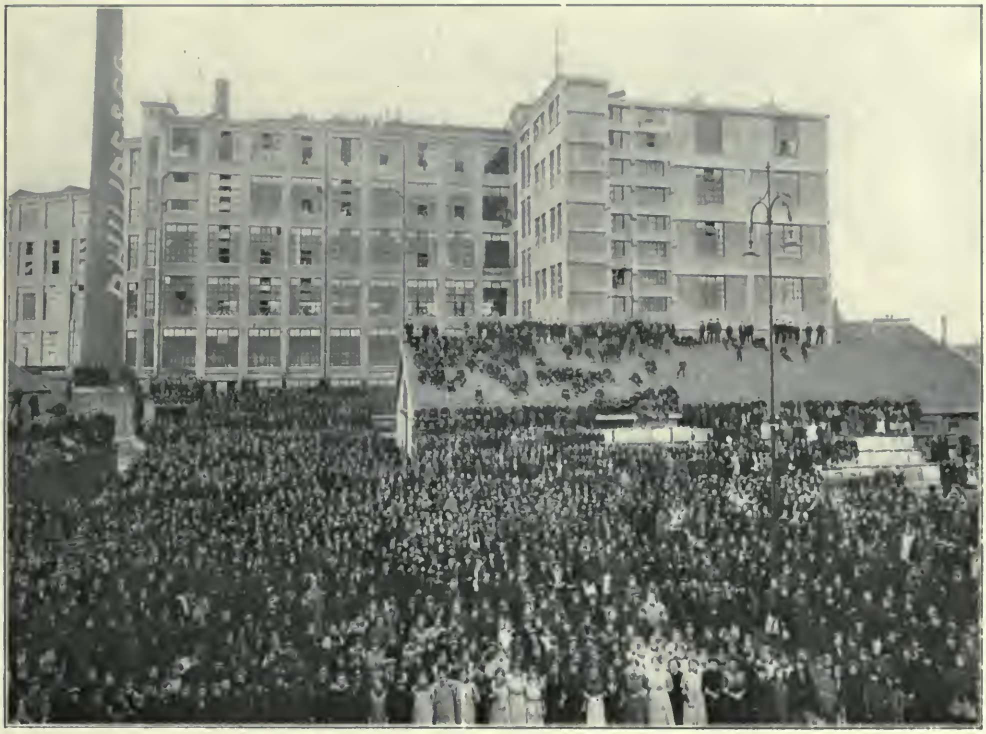
In the first place there is "Philips Village" which may serve as a model of the way in which the dwelling question is to be solved for a numerous staff of employees. At the entrance of the little town one sees immediately the wide spaces of the sports grounds and park. In the building of the houses there are evident signs of architectural care and that typical Dutch houses are kept in a state of almost painful cleanliness, need scarcely be said. Everywhere plantations have been made of bushes and trees, including holly and other evergreens, to provide pleasant variety both summer and winter. The village now counts some thousand single-family dwellings, and every possible care is taken to provide for the material and spiritual or moral welfare of the inhabitants.

Not only are the houses for officials and engineers, as well as those of the workmen, models of applied architecture also in the practical comfort of their interiors, but everything concerning the lives of their people has the careful attention of the management. There is a medical service at everyone's disposal, hygienic care in sections for men and women, farms are kept to supply milk specially for children and invalids, 65 acres of ground have been laid out as allotment gardens for those who desire to do so to grow their own vegetables, there is a co-operative bakery as a branch of a Supply Association, with grocers and other stores, there is a sewing-school, where some 400 factory girls can obtain training for the household work awaiting them in married life and at the cookery school they and the married women, can go through a course of cookery lessons without any payment. There is a school for employees who have not received enough education, where they have a chance to make good what they have missed, there are also more advanced courses in commercial correspondence and other things for adults.

We have mentioned the park and sports grounds. Every kind of game is practised here and the trophies collected prove that the Philips teams can well hold their own. Gymnastics are practised by girls and boys and, of course, sporting excursions on Saterday afternoons and camp holidays in the surrounding country are often indulged in. The province of Brabant is distinguished by its love of music and the Philips Harmonic Society has made a name for itself in many a performance of music. Besides those mentioned there are many other means of recreation and amusement which would have to be included in a complete list.

For the benefit of the employees there are large pension and relief funds, for which of late years 15 per cent of the profits (instead of 10 per cent as decreed by the Statutes) is reserved. Thus, in a businesslike and at the same time kindly fashion, in a moral and material sense, the interests of all those whose energies are employed in this concern are well looked after. For from the highest to the lowest all are working for one object, the prosperity of the Philips lamp.

The object of this short sketch has been to draw the attention of foreigners interested in modern Holland to what is going on in one of our chief Dutch industries, devoted to the production in huge numbers of the famous lamps coming from Philips' Incandescent Lamp Works at Eindhoven.



Philips' Glowlampworks Ltd., Eindhoven, Holland.
3000 of the 6000 Hands.

The First Dutch Window-glass Factory, Maassluis (Holland)

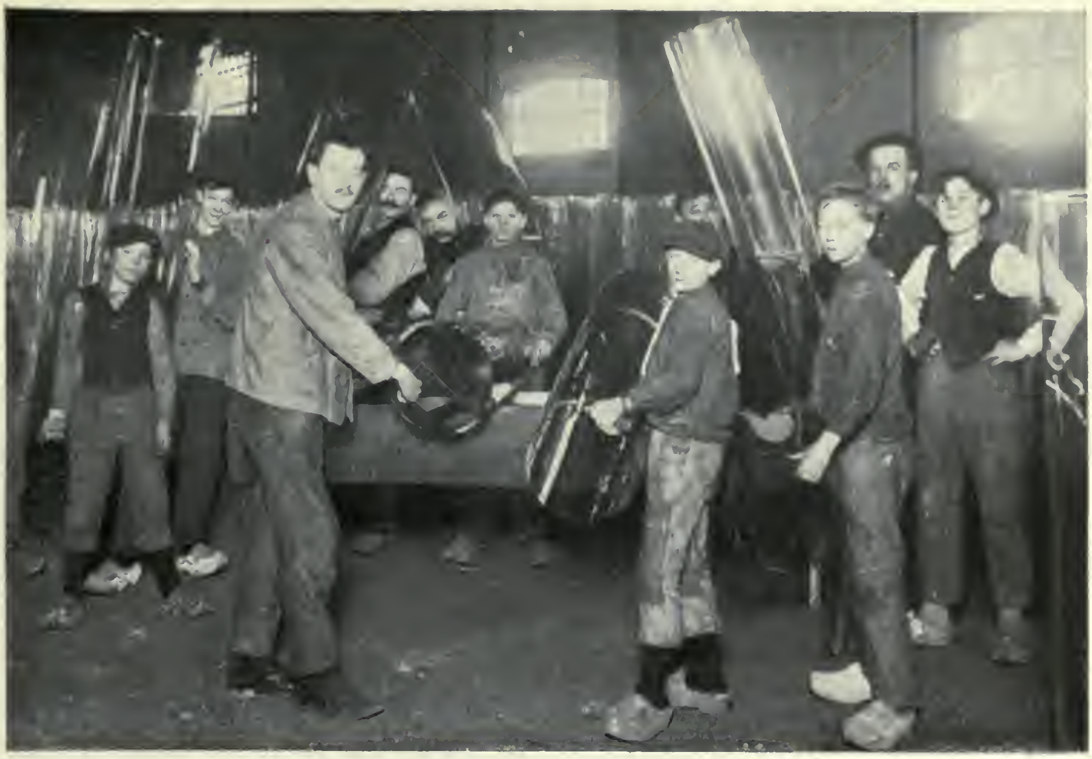
The flattened out glass as it emerges from the furnace.

The manufacture of window-glass in Holland is of comparatively recent date; in 1910 the First Dutch Window-glass Works were established at Maassluis in premises lying between the New Waterway and the railway to Rotterdam and the Hook of Holland.

This ground is 12.320 sq. metres in area, to which in 1920 new mechanical glass works were added, containing 10 glass drawing machines and occupying 24.864 sq. metres, 800 piles being driven into the ground to form the foundations. There is a special overhead conveyer carrying raw materials and fuel to their destinations. The two sections of the factory together use fl. 35.000 of raw materials, fl. 160.000 of coal and fl. 60.000 of wood per month.

The Maassluis Glass-works employ about 800 Dutch and Belgian workmen. At any time, window-

The first operation in making window panes is the blowing of glass cylinders.



The cooled cylinders are split lengthwise by means of a stick with a diamond inserted in it.

glass can be supplied to the home and foreign markets and, as it is exclusively made by Belgians, the quality is exactly equal to the Belgian glass. At present the production is 1.500.000 sq. feet per month which will be still more than doubled when the mechanical factory is set to work.

Before the war, nearly the whole of the glass-production was used by the Dutch market-gardeners for hothouses and frames, while from the beginning of the war the demand for window-panes and photographic-glass was supplied. The mechanical factory will supply any ordinary window- and horticultural glass desired, including that needed by picture framers.

These works have already found a market in Denmark, France, South America and the Dutch East Indies, besides the above supply to the home demands, and it is the only factory of the kind in Holland.

Window panes are cut to measure from the sheets of glass.

Indische Hout Import Mij, Amsterdam

(Indian Timber Import Coy. Ltd.)

The wide timber forests in the tropics have been much in evidence of late years through the import of timber by various Dutch companies. Among the most important of these is the "Indische Hout-Import Mij." established at Amsterdam in 1913.

This Company confined its attention at first to the import of Java teak-wood only, for which purpose a branch office was opened in 1913 at Surabaya, and as the business of the Company grew, branches were opened later on in Siam, at Bangkok, chiefly for the import of Siam teak-wood, but also for rose-wood, cedar and other woods; and a third one was started by means of an agency at Port Gentil (Cape Lopez) in French West Africa, for the export from there of the various West Africa woods, principally the well known Okoume wood, which is sent by whole cargoes, from f. i. 2 to 4000 tons at a time, and which is much used for the manufacture of cigar boxes and ply wood.

Reviewing these three spheres of work, we remark that the Java teak-wood finds its way mostly to Holland, France, Belgium, Germany, Italy, Austria, Scandinavia, South Africa and North America. There are representatives of the Company in Italy, North America and Scandinavia.

The shipment of Bangkok teak-wood, with the well known brand $\overset{\text{M.F.}}{\text{B.}}$ takes regularly place on a pretty large scale chiefly to England. In the first year of its existence (1919) the branch at Bangkok sent about 2000 loads (nearly 3000 cubic metres) of teak to the English market.

However by means of consignments the Coy. is introducing its Bangkok teak also to other countries which are large consumers of teak such as Italy, France, Scandinavia, a. s. o. where it has already its regular buyers for Java teak-wood as stated above.

Timber yard at Surabaya.

Okoume raft on the Ogoue.

The export of Okoume wood from French West Africa (Gabon) takes place from the Company's own concessions, where many miles of Decauville railways facilitate the transport. A steam launch carries on the traffic between the shore and the vessels lying off the coast.

The Company, as one of the most important shippers of West African timber, has been appointed agent for different Steamship Companies which have a regular Service on the West Coast of Africa.

The markets for the wood from Gabon are in England, Germany, France, Belgium, Italy, Austria, Scandinavia, while large shipments go directly to North America.

Extending its operations into all directions the Company has appointed buying agents in North and South America. Thus, for example, in 1919/20 some 1500 tons of mahogany have been shipped from American ports.

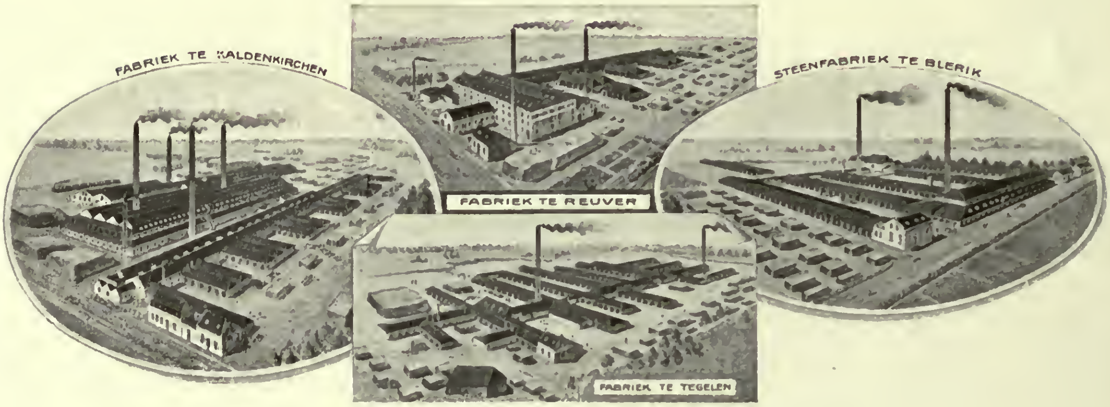
Resuming therefore, we see, that the Indian Timber Import Co., devoting itself exclusively to the import of the finer kinds of wood, has secured a regular supply from the countries of origin by the establishment there of branches. By means of its old relations in the Dutch East Indias the Company is one of the chief importers of Java teak, and its comparatively recent establishment in Bangkok is already doing a large trade in Siam teak from there.

There is every prospect that the branch in West Africa will be equally successful and that the Company will become too one of the chief timber importers from that country.

Although the last establishment of the Coy. in the countries of origin, this West-African branch has become already one of the largest.

Trimming tree trunks for transport near Port Gentil (West Africa).

Gebrs. Teeuwen, at Tegelen (Holland)



Roof-tiles, conduit pipes and brick factories

The steam factories for tiles, conduit pipes and bricks belonging to the Brothers Teeuwen at Tegelen, in the province of Limburg, were established in 1867 by Stephanus and Paulus Teeuwen. In 1844 brickmaking had been started in the ordinary field kilns, but the year 1867 is looked upon as the natal year, as the making of tiles for roofing was begun then. Of course the market was found originally in the neighbourhood of the works, both in Germany and Holland as far as horse and cart could carry. The raw material used then and now is the potter's clay found on the spot, which is excellent for the purpose, as analysis has also proved.

In 1888 the Germans began to impose import duty on the tiles made on the French Boulet system, which had been adopted in Holland, so the firm started a factory just across the frontier at Kaldenkirchen. As time went on, a brick factory at Blerik was taken over and a tile factory started at Reuver, which latter was extended and equipped for making conduit pipes as well.

The leaders of the industry marched with their times and adapted their methods to the demands of their customers, so that several forms of tiles were produced, thus appeared the Douai tile or Tuiles du Nord also called the Leforest tile, the Mulden tiles, which are much like the Marseilles tiles, the villa tile and many other kinds, including the improved Dutch tile, so that now the factories turn out no less than twelve different varieties of roof tiles, not counting the hundred or more diverse shapes, which are all to be had in the silver-blue colour, red or any other shade and glazed. Tiles of any shape can be made to order.

Conduit pipes are kept in stock in diametres from 3 to 20 inches, either straight or curved with junction pieces and every detail that can be asked in this branch. At Reuver, Kaldenkirchen and at Tegelen the manufacture goes on independently of the season or the weather.

The large assortment of patterns and sizes and the excellence of quality have caused the yearly sales to double and redouble themselves times and again. The experience of the heads of the firm, who have grown up in the business and are masters of the craft, has of course contributed to the success. In 1883 the products of the firm were awarded a silver medal at Amsterdam and at Luxemburg in 1898, the gold medal.

The four factories employ about 500 men and they turn out annually some 5.000.000 bricks, 15.000.000 roof tiles and more than 1200 truck loads of earthenware pipes and conduit pipes.

The Hollandia Factories Kattenburg & Co., Amsterdam

One of the first big industries to settle on the extensive district prepared for such purposes and growing up as a new Amsterdam on the other side of the Y, was the rain- and waterproof clothing factory mentioned above.

The Hollandia Factories have been established in November 1910 as a limited Company with Messrs. J. N. Kattenburg, I. M. Kattenburg and A. A. Boom as managers, up till that moment having been a part of the N.V. Goederenhandel v.h. L. A. & F. L. Kattenburg & Co., which Company enjoyed an excellent reputation in its numerous branches in the different Dutch towns, where their shops are known as "Magazijn Nederland" and which Company in the history of the clothing-trade in Holland has played a leading part.

One of the workshops.

It was established in 1856 by Mr. L. A. Kattenburg, who has trained his ten sons in the business. Said Gentlemen put an end to Dutch dependence on foreign manufacturers for men's and boys' clothing and taught the Dutch public to appreciate home-made articles. The first attempts were at once a success, so that mass-production could be resorted to. Provided with the best English materials, foreign competitors were easily rivalled and in 1899 the first big work-shops were opened in the Warmoesstraat at Amsterdam. It is well known that after 1850, when Macintosh first applied the vulcanisation process of rubber to clothing, England was the country of macintoshes or rubber coats.

Kattenburg, seeing the value of Dutch manufacture, introduced the making of the mackintoshes into Holland, but imperfections in the finish of the goods postponed a complete success. This was the time when the "adhering-process" had to be learnt from England. For this purpose a younger member of the firm (the present chairman of the board of Managers, Mr. J. N. Kattenburg) went to England to learn the manufacturing and returned to Holland to teach his workmen here, so that in 1909 the company was ready to start the manufacturing on a larger scale, and it was not long before the Dutch article, first of all in Holland and then far beyond

Cutting out department

our frontiers, attracted attention. The secret of this success lay herein, that the English co did not always suit the Dutch figure; the special type of figure characteristic in each coun being taken as a basis, after a study of the subject, the firm was soon able to produce the clo ing that suited best. Thus Sweden began in 1909 to get its raincoats from Holland, Denm Switzerland, Austria and even Germany followed soon. In 1911 the firm was employing hands and was steadily progressing. France, Spain South-America and the Dutch Colo became regular buyers, while the big export-houses at Hamburg, with relations in every qu of the globe, drew their stock from Amsterdam. In 1912 it became apparent, the facto the Warmoesstraat could not be expanded any further and it was decided to build a new fa on the other side of the Y, and these massive buildings may be called symbolic of the co and perseverance which have built up the business.

The new factory was opened on January 15th. 1917, and after 4 years, further exte were needed. The troubles of war-time have been braved and the old markets all over the world are re-opening. In 1913, 80 per cent of the production was exported and the turnover of that year is now four times what it was, which discloses something of the vast perspectives opening to the Hollandia Factories. They now have in their employ some 1100 hands, partly in their work-rooms in Amsterdam and partly in their works at Bocholt.

The rubber factory which has just been opened is a separate company called "Amsterdamsche Rubber fabrieken v/h Pompe & Co." but is under the same management as the Hollandia factories; needless to add, it is provided with the newest equipment.

Making an imaginary seven-leagued boot trip through these factories, we will endeavour to give some idea of what is going on there. On starting out, one stands in front of an imposing frontage, 160 metres in length (1 metre = 39 inches), the building is 4 stories high and 18 metres deep. Every modern appliance is in use, not only in the manufacture work itself, but in the administration (e.g. electric clocks, telephones with 100 contacts in the works alone, a printing works, canteen and kitchens for the employees, etc.) to ensure economic labour supplying a *good-product* at a *low price.*

The rubber department

With a weekly turnover of some 5000 raincoats, the big storage place in the basement is a first necessity. In the basement also the materials are measured and inspected and treated for shrinkage and so on. The chief process is classified into waterproofing (rubber single and rubber double) and showerproofing (impregnated stuff).

In the cutting out department, with its numerous drawing tables, one sees the cutting machines with the ribbon-knife which cuts 40 layers of material at once. In the finishing department the cut out pieces have the details added to them, the strips of rubber for the seams and the bits to strengthen certain places on the garments are stamped out and there also are the clothes presses where high pressure with steam is used and the garment afterwards dried.

In the sewing rooms, 300 machines driven, by tens together, by a one to two H.P. motor are at work. The rubber department completes the attachment of the details by means of rubber soaked in benzol, after which the garments are kept in a special room for about 24 hours to remove all odour.

Correspondence department.

Buttons and all such additions are put on by machine and then every article is inspected as complete, before going to the show rooms where the buyers come.

Of course, there are besides the work-rooms, numerous offices for the business of buying and selling, a designing office where expert designers are at work, an advertising department, fitters, carpenters and painters shops, the boiler house which consumes 1000 kilograms of fuel a day, the packing and sending department and so on.

In the new rubber works mass production is carried on of all kinds of articles, not strictly belonging to the clothing industry, but which are constantly in demand by clients.

Two boilers with 60 sq. metres of heated surface supply steam for the engines, the factory having the newest hydraulic presses, mixing machines and calanders, vulcanising boilers, a Passburg drying appliance, sieves, etc.

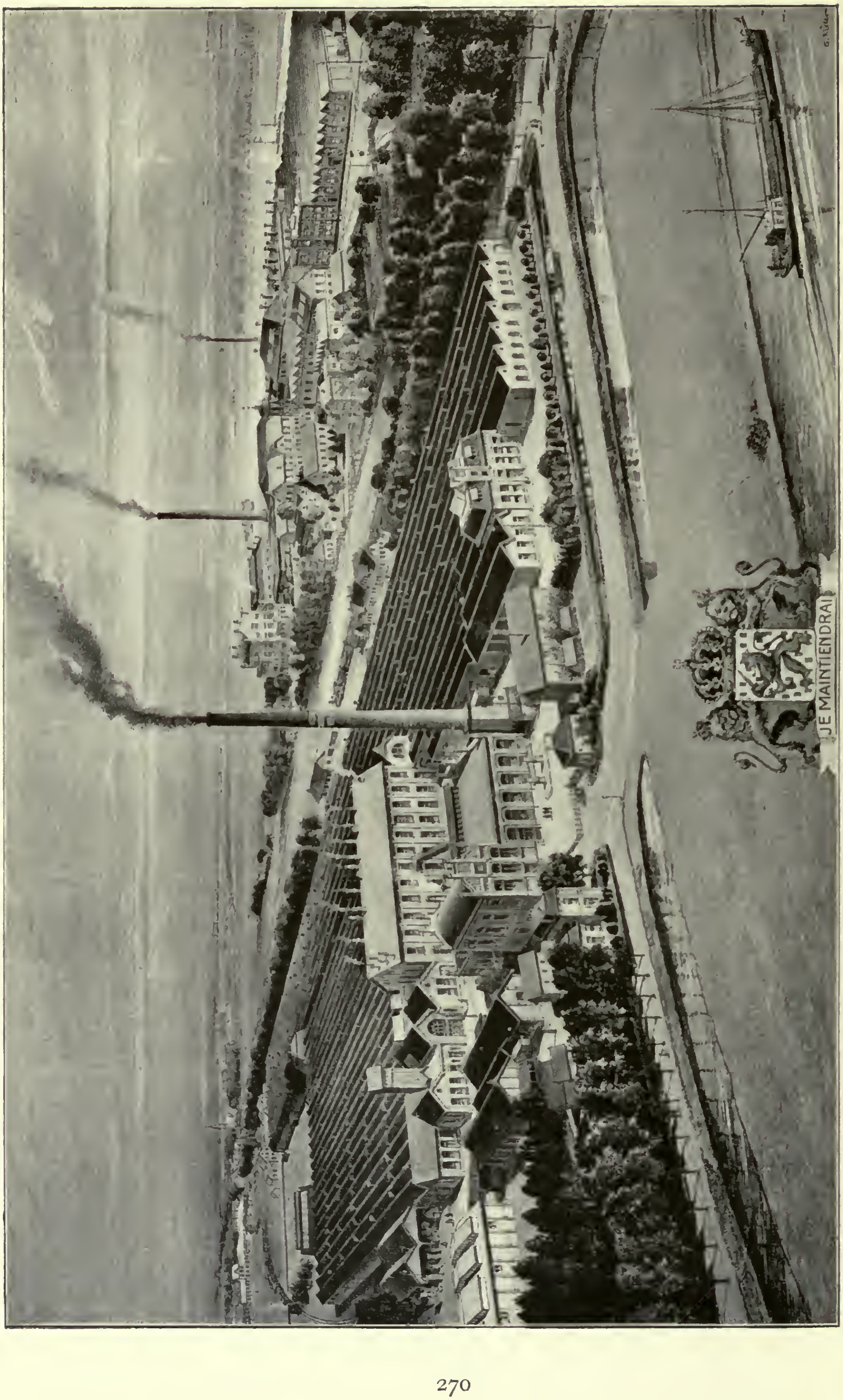
The Company stands very well financially, having paid a dividend of 17 per cent of late years, owing to the sound commercial insight with which it is carried on, following modern principles, among which one may mention a special branch at Manchester for buying materials. This ensures an early knowledge as to the trend of prices, so that no time is lost in laying hands on stuffs of special design and make and "getting ahead" of rivals in the market.

The "Hollandia Fabrieken" have representatives at Batavia (for the East Indies), four in South-America, in Australia, in North America and South Africa. By these means the management keeps in direct contact with its clients all over the world.

Thus we have shortly reviewed an industry where rare talents have attained rare results and made a great reputation for the Dutch ready-made clothing industry.

HOLLANDIA
KATT

View of the Hollandia Factories.


JE MAINTIENDRAI

KONINKLIJKE STOOMWEVERIJ TE NIJVERDAL, ALMELO

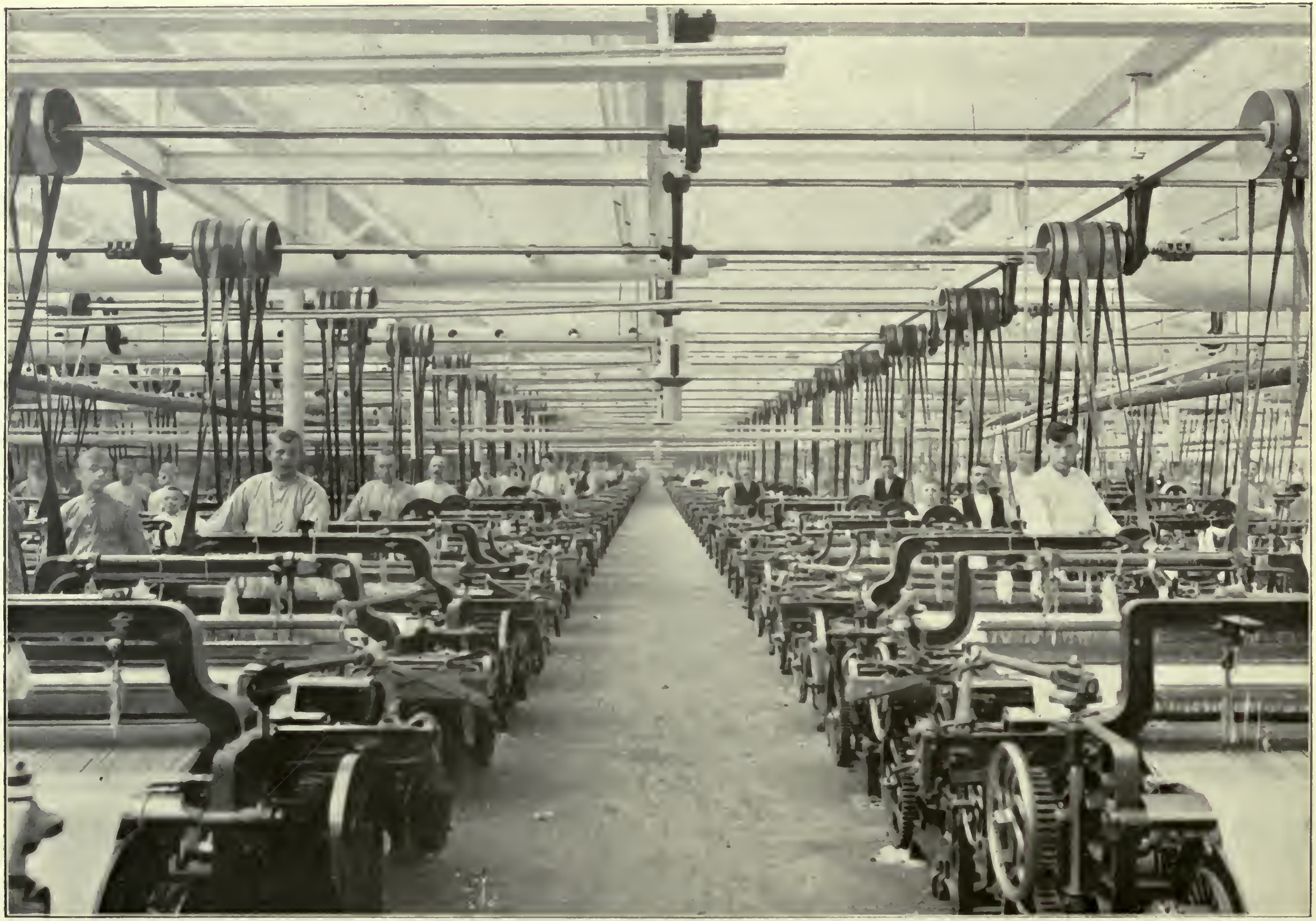
Koninklijke Stoomweverij te Nijverdal, Almelo

It would be impossible to write the history of the Twenthe textile industry without the name of Nijverdal coming into it, together with the factories of the "Koninklijke Stoomweverij" there. It is perhaps a matter of general knowledge, that the honour of being the founder of the Twenthe textile industry is due to an Englishman named Thomas Ainsworth, but it is not so well known, that the efforts of this man of genius created a weaving school at Nijverdal in the year 1836 and that a factory of the Netherlands Trading Society ("Nederlandsche Handel Mij") was established there then.

Thus, under the able guidance of Thomas Ainsworth a nucleus of trained weavers was formed. In the course of a few years he brought these model mills to a flourishing condition, when in 1841 death put a sudden end to his labours. The mills passed into other hands and were partly used for cotton weaving and partly left idle. A period of decay set in, until, in 1852, the firm G. and H. Salomonson of Almelo bought the mills, pulled them down and raised on the historic spot, where once the Weaving School of Thomas Ainsworth had stood, the first mechanical weaving mills in Holland under the name of "Koninklijke Stoomweverij te Nijverdal." In 1872 this firm was converted into a limited liability company.

As to the Netherlands Trading Society, it should be mentioned that it was this company which provided the capital by means of which Ainsworth's plans were realised. It is due to the efficient support lent by this Company that the flourishing textile industry of Twenthe

Turbine-room of the "Koninklijke Stoomweverij te Nijverdal" at Almelo.



One of the weaving rooms of the "Koninklijke Stoomweverij te Nijverdal" at Almelo, covering 9000 sq. metres with about 2000 looms.

Making-up room of the "Koninklijke Stoomweverij te Nijverdal" at Almelo.

developed, not in the last place in Nijverdal itself. The warehouses of the Netherlands Trading Society were later on acquired by the Koninklijke Stoomweverij te Nijverdal who erected their second factory, the Bleachworks, on the spot in 1888.

After the opening of the steam mills the company made unbroken progress and built that vast group of buildings, which surprise most visitors by their excellent equipment and the proverbial Dutch neatness and order prevailing. The Koninklijke Stoomweverij te Nijverdal employs at present more than 1800 hands and the area covered by the works is about 80.000 square metres.

On approaching the buildings, one is struck by the imposing frontage of the electric power station, where two turbo-generators, each of 2300 H.P., supply the power for the mills. The hall is as high as a church and is lined with light-coloured tiles, decorated with designs taken from the weaving-industry, as is also the ceiling. In the boiler house there are five boilers, each of 110 square metres heated surface.

Entering the spacious and well lighted weaving shed, proper beginning at the winding room, the warping and sizing rooms, one receives an overwhelming impression of this great establishment, which reaches its culminating point in the two weaving rooms, one of which has an area of 5700 square metres and where some 1200 looms may be counted, and the other covers 9000 sq. metres, with about 2000 looms.

These looms turn out every week about 400.000 yards of material. The principal articles are: cambrics, shirtings, sheetings, drills, twills, madapolams, nainsooks, mulls, jacconets and handkerchiefs. After leaving the loom the goods are carefully examined, measured and passed on to the Bleachworks.

These works are only five minutes walk from the Weaving shed; both of them have railway connections to the two stations of the place. A couple of benzol-engines run the traffic between the two factories, and between the factories and the stations.

The Bleachworks have their own electric power station with a turbo-generator of 1500 H.P. The boiler house is equipped with 6 boilers, each having a heated surface of 110 sq. metres. The water needed for the Bleachworks is supplied by wells whence it is pumped up into a water tower.

It is not our intention to describe the processes of bleaching and finishing here. But we must again make a note of the striking neatness and order and of the evident fact that no cost has been spared to make the installation as perfect as possible. Every possible variety of finishing machinery is to be seen, so that the particular desires of every buyer may be complied with. In the "making up" room a most critical inspection is applied to the cloth as the finishing touches are given. The goods are stamped, labelled, packed in cases or bales and sent away to every part of the world, more especially to the Dutch East Indies, India and China. The home market also takes a fair share.

Thus one turns from this historic spot, in the conviction that one has seen one of the greatest and finest factories of Holland, where the unrelaxing efforts to maintain orderly, clean surroundings have had a visible effect on the workers too, the results of which are to be seen in the immaculate products of these factories of the "Koninklijke Stoomweverij te Nijverdal," Almelo.

Van Engelen and Evers at Heeze

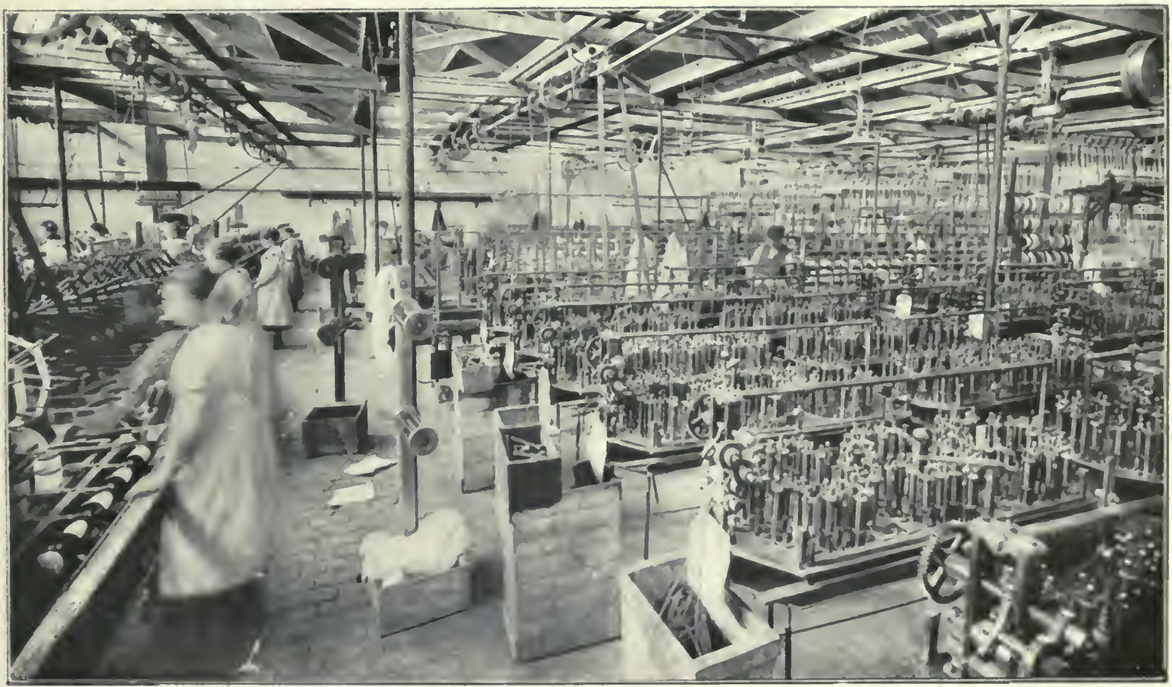
Trade Mark.

One of the most remarkable among the Dutch textile industries is that of ribbon weaving; there are not many factories of the kind, only about eight, but the high pitch of technical skill employed in this branch has brought about a corresponding production, which can meet its rivals in the world's markets, Germany and Japan, without fear. Indeed the fame of this industry dates from the 17th century, when its wares from Bois-le-Duc and Harlem were in demand beyond the Dutch frontiers.

The art of weaving tapes was brought into this country by the Moravian Brotherhood and the tape known by their name is still asked for in the provinces of Groningen and Drenthe. The Moravian Brotherhood left Holland about 300 years ago and settled in the valley of the Wupper, where the Germany tape-weaving industry is concentrated, mainly in Barmen and Elberfeld. After some time the industry was revived in Holland and in 1850 the first tape-weaving mills were established at Heeze, close to Eindhoven. The hand-weaving methods were gradually abandoned after that and the household occupation of weaving gave place to mass production in mills with steam-driven machinery.

The province of North Brabant supports many textile industries, the sandy soil is intersected by many small rivers and on their banks factories have been erected, the ground being inexpensive and the standard of living there makes low wages possible. In the small, but picturesque village of Heeze, the largest tape-weaving factories are to be found, one of them erected in 1900, is the "Stoombandfabriek" of van Engelen and Evers; it was an Evers who founded the first factory of this kind in Holland.

This factory covers an area of 4000 sq. metres and gives employment to about 200 men and turns out about one and a half million sq. metres of tape, braid, laces &c. every week. The mills are driven by electric power and suction gas motors, using 225 H.P. altogether. Bleaching works and finishing works are all included in the factory buildings.



Braiding section.

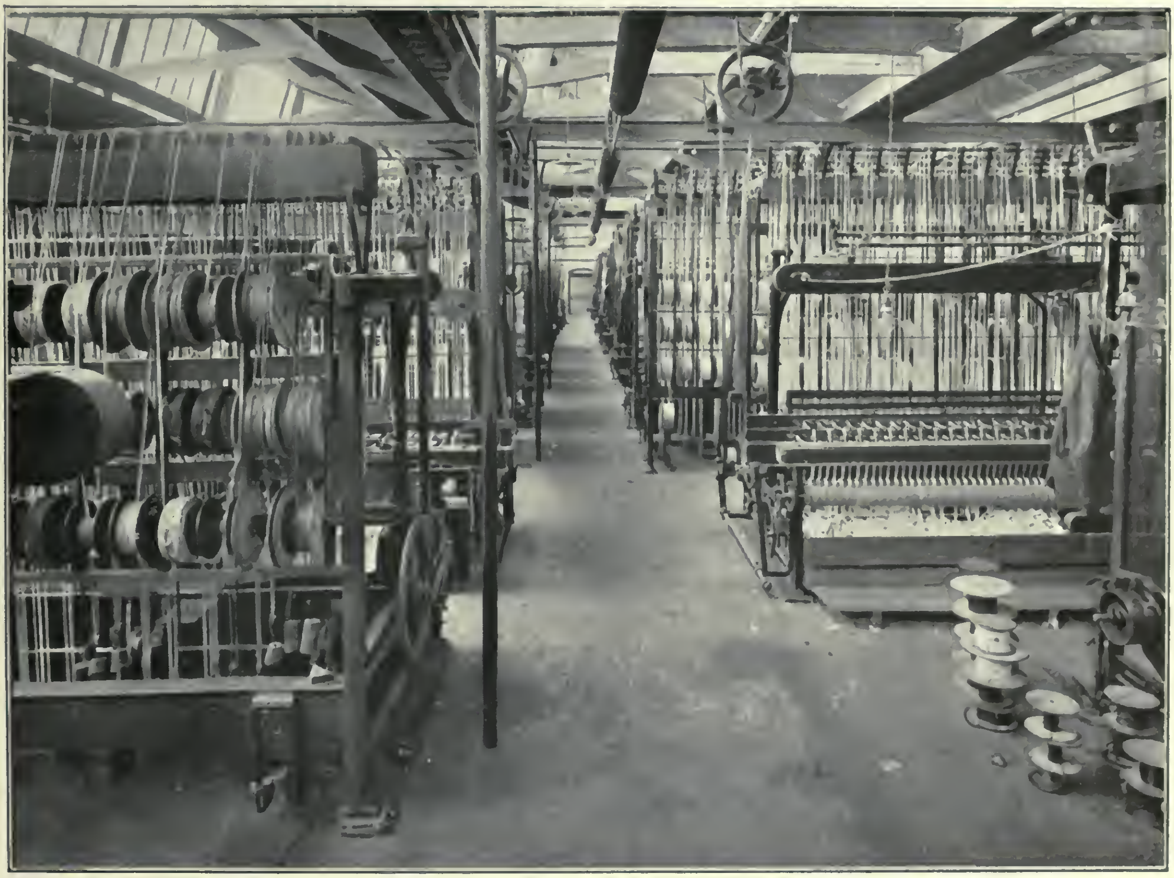
Washable trimmings weaving room.

The articles produced in this branch of the textile industry are almost infinite in their variety; there are no less than 1140 designs used in weaving fancy braiding and trimming in all kinds of colours. The articles mostly made at Heeze are: all kinds of linen and cotton tape, edgings, washable trimmings, boot-laces, corset-laces, sewing thread and elastic. One would need a whole volume to describe these things in detail, we will simply touch on one or two of them. The laces made are not only of cotton, but may be of strong thread, of macco or of silk and of any colour desired.

To gain some idea of the variety of articles woven, one must turn to the list of uses to which they are put. There is tape which goes to electric cable works to be used for the insulation of wires and cables; another kind is used in dressmaking as binding or ornament in a hundred different ways; silk ribbons go to the cigar factories to tie up bundles of cigars, other ribbons are used in boot-making for binding and for loops ; silk and cotton-elastic is used for braces and garters and so on; woven trimmings are used for children's pinafores, for all kinds of clothing and so on and so on.

For foreign countries these wares are turned out by the factory at Heeze in special designs for many peculiar uses, even to the bordering of temple draperies. Indeed two thirds of the total production goes across the frontiers, and the export is increasing, being chiefly to the East Indies, to India, to England, Scandinavia and the Russian Border States.

In the weaving halls the noise of the 105 looms and the 200 plaiting machines drowns all other sounds, one cannot hear oneself speak, but one stands amazed at the ingenuity of this automatic machinery. Only a few hands are needed to control the looms, some of which are weaving from 80 to 100, even to 136 strips each, the thickness of the stuff varying between 20 and 1000 threads. Should one thread break the machine stops automatically. Another beautiful example of technical ingenuity is the loom making embroidered trimmings, the coloured design being woven together with the material. Australia is a ready buyer of this work. There are other machines making waist-



Ribbon weaving rooms.

Packing floor.

band webbing with the whalebones woven into it and others again make a speciality of the loops one uses to pull on one's boots, the name of the bootmaker or boot shop being woven in.

It is scarcely necessary to add, that a firm of such a reputation as this sees to it that the dyes used are fast and durable. In the dye works the raw materials are carefully prepared so that the colours shall not fade even when exposed to the trials of the laundry, to sunlight or even bleaching powder. The manufactures from Heeze have been subjected to many tests and, even when compared with the Japanese products and exposed to strong light, they have kept their colour unaltered.

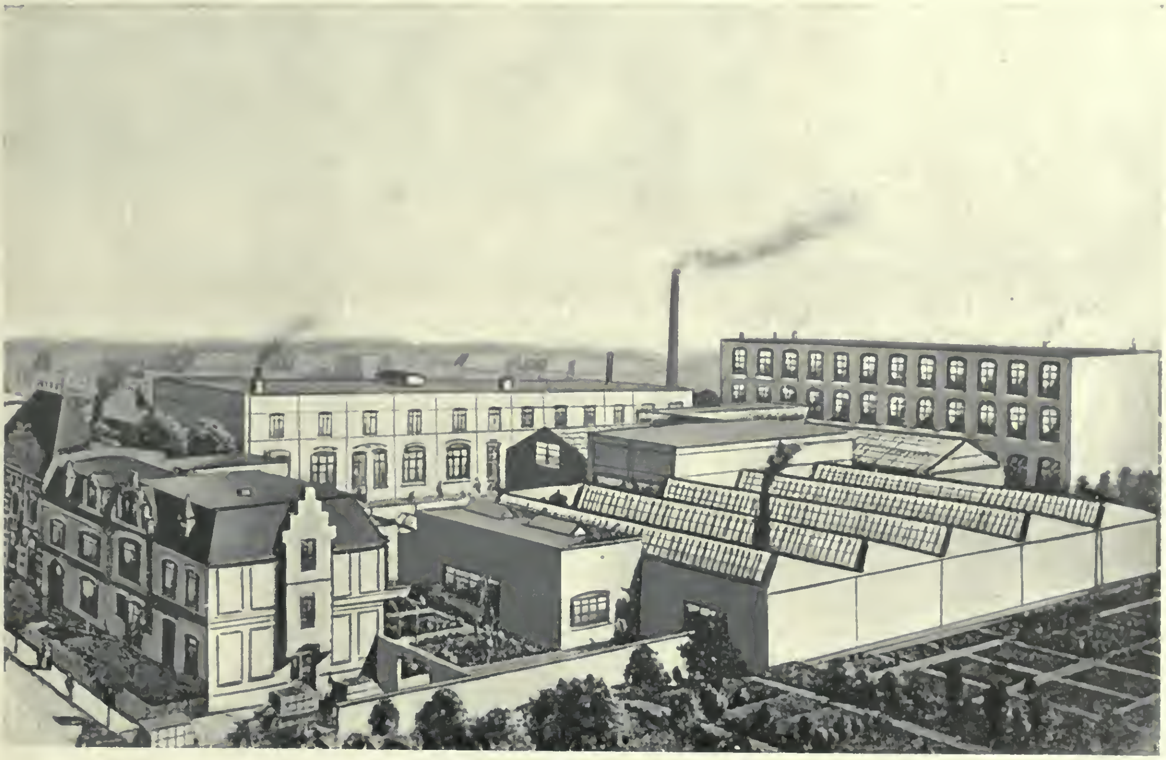
Finally, there is the braiding section, which turns out 2000 gross of laces, and these also in many qualities, varying from 13 to 131 double threads in thickness. The thread is first hardened and glazed on a machine with 24 revolving brushes, while on the double machine the threads are wound in pairs on spools. The tag machines fix some 300 gross of tags on the laces every week. Elastic is made of thin rubber threads stretched to about three times their length and woven into the webbing as desired.

On the packing floor girls are employed among piles of the manufactured goods, marking them with the proper labels, etc. and packing the parcels as required. As an exception to the legal 8 hours working-day, this factory works 60 hours in the week to keep pace with the demand for its goods, which are sent in great quantities to every quarter of the globe.

Dickman's Umbrella Works in Nimeguen

The making of umbrellas is one of those highly specialized industries which are only sparsely represented in Holland. That notwithstanding this the Dutch umbrellas are exported in large numbers speaks for the technical and business abilities of the managers of this branch. The principal seat of the industry is at Nimeguen. Fifty years ago umbrellas were mostly made by hand, but, as in every other industry, machinery has gradually taken place of handwork so that the manufacture is now carried on on a large scale.

The Dickman's Umbrella Works may be regarded as the pioneer of the Dutch umbrella making industry, celebrating its golden jubilee in 1922. The grandfather of the present head of the firm made umbrellas in the middle of the past century. It was he who made the old fashioned "family umbrella" of immense size. These old umbrellas were entirely made by hand and the frame was real whalebone, shaved down to form ribs and supports of equal size and strength, whalebone of similar quality and elasticity being selected to make each umbrella. The covering was stitched and hemmed by hand, so that a workman who could turn out one umbrella a day was a master of his craft. The present factory has a capacity of about 100 dozen umbrellas a day, such a difference has the advent of machinery made. An umbrella used to be regarded as a luxury only within reach of the rich. Umbrellas could be hired on occasion if one's means did not permit of purchase, but the manufacture of them by machinery reduced their price and made them an article of common use.


General Vieuw of Dickman's Umbrella Works at Nimeguen.

The factory was established in 1872, re-built in 1889 and again in 1913; its situation close to the station is of course greatly in its favour for speedy despatch of goods. A huge stock of handles is kept ready to finish off umbrellas in any particular style that may be desired according to the fashion of the moment and as the customs of countries or peoples may require. This perhaps explains the growing export to the East and West Indies, to Africa and to South America.

One of the Stores.

In 1907 the factory was brought up to date with new machines and motor power. Although the assembly of the parts of an umbrella is still done by hand, one stands amazed at the ingenuity of machines which cut off sticks in sizes, shave down the point, bore round or oval holes in which will be inserted the ribs and springs by means of which an umbrella is opened and closed. This is all done in a few seconds and while the workman fixes the frame on the stick, in an other department the cover is being made. The cotton, or silk, or whatever the material may be, is spread on the cutting out tables in such a way, that a circular knife cuts the three conered sections of covers for seven or fourteen dozen umbrellas at one movement. The three cornered pieces are passed on to the electric sewing machines to be sewn together and hemmed if necessary, then the cover is stretched on the ribs and sewn on. Finally the umbrella is steamed to procure the perfect fit and tension an umbrella must have when opened. Having been dried, the finishing touches are applied, the trimmings and the case, when the umbrella passes into the packing department, where boxes and cases (also made by electric machines) are waiting for them. Every taste and demand for umbrellas is catered for. The thousands of different handles are wonderful to behold, they are to be had in gold and silver or plated, in real and imitation ivory, in galalite and celluloid, in stonenut and steel, in metal and horn, in fact in every conceivable variety, for modest and for well filled purses, for East and West! One cannot help marvelling at such an industry entirely dependent on Jupiter Pluvius and the protection mankind seeks from his caprices!

Packing-room.

WM H. MÜLLER & CO.

Shipowners and Merchants

HEAD-OFFICE
THE HAGUE · HOLLAND

De Twentsche Bank

Amsterdam — Rotterdam — the Hague — Dordrecht — Utrecht — Zaandam

De Twentsche Bank, a limited liability Company, was founded at the end of December 1916. One of the objects of its formation was the taking over of the business of De Twentsche Bankvereeniging B. W. Blijdenstein & Co. a partnership "en commandite" established in 1861, which form of partnership and institution were no longer adapted to the modern developments in Dutch banking business. The new Bank thus founded may be said to belong to the biggest of its kind in Holland.

Part of the Safe Deposit Vault.

The cradle of De Twentsche Bank, as its name implies, lay in the province of Twenthe, the eastern industrial centre of our country, where the first office of the Bank was opened at Enschede by Mr. B. W. Blijdenstein Jr., under his own name. This firm has continued its existence under the same name until to-day, but De Twentsche Bank takes full responsibility for its engagements.

Besides this responsibility for the Enschede office, De Twentsche Bank is also liable for the engagements of the firms of Ledeboer & Co. at Almelo, and of B. W. Blijdenstein & Co. in London, which both, like the firm B. W. Blijdenstein Jr. at Enschede, have the character of branch offices, but for certain reasons are continued under the names which they bore at their establishment.

De Twentsche Bank may boast of a steady progress. The business began with moderate deposits of capital by the Twenthe manufacturers, but when it was converted into a limited liability company, dating from 1st Jan. 1917, its capital stood at fl. 16,000,000 and the total reserves at upwards of fl. 9,000 000.

At the same time that De Twentsche Bank Ltd. was established, the businesses of De Wissel- en Effecten Bank of Rotterdam and of the Bank voor Effecten- en Wisselzaken of the Hague were taken over and continued under the Bank's name. Later on De Stichtsche Bank of Utrecht and the business of Stoop & Zoon of Dordrecht were also absorbed and offices were also opened at Zaandam and Delfshaven. In the course of the last few years the capital of the Bank has been greatly increased by various issues and on 31st December 1921 amounted to fl. 35,500,000, while the reserves at that date amounted to over fl. 12.000.000.

Verboden te rooken.

Corner of the Banking Room.

It should also be mentioned that De Twentsche Bank is largely interested in De Bank van Wisselink at Alkmaar, in De Groninger Bank at Groningen, with branch offices in that province, in the Geldersch-Overijselsche Bankvereeniging at Deventer and its branches, in the Haarlemsche Bankvereeniging at Haarlem with its many branches in North and South Holland, in the Lissesche Bankvereeniging at Lisse and in the Provinciale Bank voor Limburg which has many branches in the southernmost province of Holland.

Board Room.

De Twentsche Bank devotes itself specially to supplying credit in Holland itself, but also maintains important relations with foreign countries in the service of the trade and industry of Holland. The highly informed investment department offers to its clients every facility for transactions on the home and foreign Stock Exchanges, while the Bank's foreign department is well equipped for dealings in foreign exchanges.

The business of the Company has developed in a regular and sound manner. The deposits and current accounts, when the business of De Twentsche Bankvereeniging B. W. Blijdenstein & Co. was taken over, amounted to about fl. 98,000,000 and the "stock-deposits of shareholders" (deposits of stock for long periods) were more than fl. 25,000,000. On Dec. 31st 1921 these figures were respectively fl. 174,000,000 and fl. 38,500,000. In conclusion we may state, that at the end of 1920, at the Head Office in Amsterdam, a considerable extension of the Safe Deposit was completed, and this new department offers 6000 boxes to its clients, which is no doubt a record among its kind.

The following figures for the years 1917 to 1921, followed by a short balance sheet of the date 31st December 1921, give a clear insight into the growth of De Twentsche Bank:

	Capital and Reserves.	Net Profits.	Dividend.
1917	*f* 30.277.000.—	*f* 2.343.000.—	8 %
1918	„ 32.353 000.—	„ 2.957.000.—	8 %
1919	„ 43.653.000.—	„ 4.619.000.—	8½ %
1920	„ 47.748.000.—	„ 4.962.000.—	9 %
1921	„ 47.847.000.—	„ 4.343.000.—	8 %

BALANCE SHEET, 31ST DECEMBER, 1921

Capital	*f*	35.500.000	—	Participation in affiliated Banks	*f*	11.294.670	—
Reserve Fund	„	12.347.316	53	Cash on Hand; Due from Banks and Bankers	„	26.859.678	76
Shareholders for stocks deposited at a year's notice or longer	„	38.567.450	—	Bills receivable	„	43.105.070	86½
Deposits and Credit-balances	„	174.461.517	45	Government securities a. Treasury Bills	„	41.085.812	49
Acceptances	„	28.780.606	19	Stocks of shareholders as per contra and other securities and Bonds	„	46.384.691	92½
Pensionfund	„	1.570.836	55	Debtors and Debit-balances	„	122.479.788	85½
Profit and Loss account	„	4.343.942	29	Bank premises	„	4.361.956	11½
	f	295.571.669	01		*f*	295.571.669	01

Nederlandsch Indische Handelsbank at Amsterdam

Branch Office: the Hague.

Overseas Offices:

In the Dutch East Indies: Batavia (Head-Office for the East).

Agencies in Java at: Bandung, Cheribon, Pecalongan, Probolinggo, Semarang, Surabaya, Tegal, Tjilatjap and Weltevreden.

In Sumatra: Medan and Palembang.

In Celebes: Gorontalo, Macassar and Menado.

In Lombok: Ampenan.

In British-India: Bombay and Calcutta.

In China: Shanghai.

In Hongkong.

In Japan: Kobe.

In the Straits Settlements: Singapore.

The Nederlandsch Indische Handelsbank (Netherlands India Commercial Bank) was established at Amsterdam in 1863. Its history is a reflection of the economical development of the Dutch Indian Archipelago of the last six decades, having taken from the very first a prominent share in the financing of its vital sources. Its great agricultural interests led, after the sugar crisis of 1884, to the creation of the Nederlandsch-Indische Landbouw-Maatschappij (Dutch East Indian Agricultural Company), with a capital now amounting to Glds. 12.000.000,—, entirely retained in its hands. The latter is partly an agricultural industrial company, as it owns eight sugar estates and factories, and partly acts as a banker to other agricultural estates and factories, financing their crops and everything connected therewith. The Netherlandsch Indische Handelsbank, after the consolidation of its agricultural interests in a separate company, applied itself to the object indicated by its name, to wit the development of trade in and with the Dutch East Indies and associated itself

ALGEMEENE
NED.IND.HANDELSBANK

The office of the Nederlandsch Indische Handelsbank at Surabaya (Java).

• • NED : IND : HANDELSBANK • •
NED IND HANDELSBANK
NED IND LANDBOUWMAATSCHAPPIJ

Office of the Nederlandsch Indische Handelsbank at Batavia (Java).

more closely with the expansion of commerce in these regions, which began at the commencement of this century and is still continuing as a result of the steadily increasing economic importance of the Dutch Colonies. Its growth in this direction is clearly shown by the increasing number of branches, at first in the Dutch Indian Archipelago itself, and later on also in other parts of Asia, namely British India, the Straits Settlements, China, Hongkong and Japan, and by the gradual extension of its share capital, which now amounts to Glds. 55.000.000,— with a surplus of Glds. 20.000.000,—.

The peculiar circumstances prevalent in the ports of the Dutch East Indies where the business of forwarding agents and warehousemen is not very developed, obliged the Bank on account of its large share in the financing of exports of produce to take in hand the management of shipments from the various ports and it has thus come into the possession of large storage places, a fleet of barges and so on, in fact of everything needed by well equipped export shippers. Hence the Bank is not only transacting a general colonial banking business, comprising exchange business, drafts, cable transfers, discounts, credits (documentary or otherwise), loans, deposits, collections, etc., but also undertakes the representation of insurance and steamship companies, and the storage and shipping of produce.

The Balance Sheet per 1st January 1922 shows the following figures. (page 287)

Balance Sheet January 1st 1922.

Liabilities.		GUILDERS.	Assets.	GUILDERS.
Capital (authorised)	60,000,000.—		Cash in Hand and at Call	16,413,036.15
non issued	5,000,000.—	55,000,000.—	Bankers abroad	10,033,551.71
Reserve-Fund		20,169,335.52	Treasury Bills	18,750,000.—
4 % Debentures		2,445,000.—	Bills receivable	16,917,423.84
Deposits at notice		21,926,705.09	Loans on Bonds and Shares	9,295,751.08
Deposits at Call		29,173,329.19	Bonds and Shares	4,888,016.19
Balance at Bankers abroad for account of			Syndicate Accounts	3,121,371.—
clients		2,765,419.97	Shares Ned.-Ind. Landbouw-Maatschappij	11,994,000.—
Sundry Creditors		23,381,381.34	Sundry Debtors and Loans on Produce and	
Sundry Accounts		31,128,176.44	Merchandise	85,484,179,72
Ned.-Ind. Landbouw-Mij. Account-Current		10,730,141.69	Sundry Accounts	20,744,837.74
Bills Payable		7,217,814.17	Properties, Premises and Furniture	3,882,308.—
Reserve for Taxes		1,279,135.89	Nederl.-Indische Landbouw-Maatschappij	
			Dividend Account	3,598,200.—
			Produce in Store	93,763.87
		205,216,439.30		205,216,439.30

Nederlandsche Handel-Maatschappij

(Netherlands Trading Society)

Established by Royal Charter A.D. 1824

Capital Paid up	*f* 80,000,000	(£ 6,666,666)
Reserve Fund (Statutory) .	*f* 19,445,211	(£ 1,620,434)
Extraordinary Reserve Fund	*f* 22,660,000	(£ 1,888,333)

Head Office: AMSTERDAM. Branches: ROTTERDAM, THE HAGUE

Branches in the NETHERLANDS INDIES: BATAVIA, SOURABAYA, SAMARANG, MEDAN
and further principal ports

Branches in the Straits Settlements, British India, China and Japan:
SINGAPORE, PENANG, RANGOON, CALCUTTA,
BOMBAY, HONGKONG, SHANGHAI and KOBE

London Correspondents: The National Provincial and Union Bank of England, Ltd.

SPECIAL FACILITIES FOR FINANCING SHIPPING DOCUMENTS TO THE FAR EAST

Building of the Head Office, Heerengracht at Amsterdam.

The Netherlands Trading Society has been carrying on business for nearly a century, having been established in the year 1824. The Company owes its foundation to the personal endeavours of King William I who wished to re-establish the Dutch Oversea Trade, which wanted a new revival, the kingdom being restored after the Napoleontic area.

The capital was originally fixed at thirty-seven million guilders, and in the course of time was repeatedly increased. Now the amount is one hundred and fifty million guilders, of which eighty millions are paid up. The steadily growing reserves now exceed forty-two million guilders and the deposits and current-accounts with which the Society is working, surpass a total of four hundred million guilders.

During the first half of the nineteenth century the Company developed itself largely in the trade between Holland and the Dutch Colonies and obtained numerous interests in the Dutch East Indies. Narrow relations of the home and colonial Governments with the Company procured it a standing in Holland and abroad that has put it at the head of the Dutch financial, colonial and Oversea-institutions.

Following its statutes the Society's task is not merely a private but also a national one, the Netherlands Trading Society being called to devote its full energy to the extension of trade, industry, and navigation of the Netherlands and its Colonies, including the study of everything proper to promote the countries' welfare. Its intermediacy in organising profitable undertakings founding new companies, and issuing loans, is duly appreciated, as is proved by its connections in the trading-,industrial- and steam-navigation world.

In the Dutch East Indies the principal interests of the Netherlands Trading Society nowadays are to be found in its relations with all kinds of agricultural enterprises in the Archipelago.

It possesses several sugar-factories of its own, holds a number of sugar plantations in combination with others, and is the principal shareholder in many other companies, working in the East. For all these companies the Society acts as a banker, the products being sold by it and so it got in hand an important export trade. All these activities have led to the establishment of a large number of branches in the Dutch East Indies, and also in China, Japan, and the British-Indies, where principally banking business is carried on.

In Europe the position of the Netherlands Trading Society is also a most important one, being the first among the bankers of Holland. The development of its international banking affairs has been such that all over the world it enjoys the entire respect and confidence due to its preponderant position among the money institutions of high standing.

Meeting-Room in the Head Office at Amsterdam.

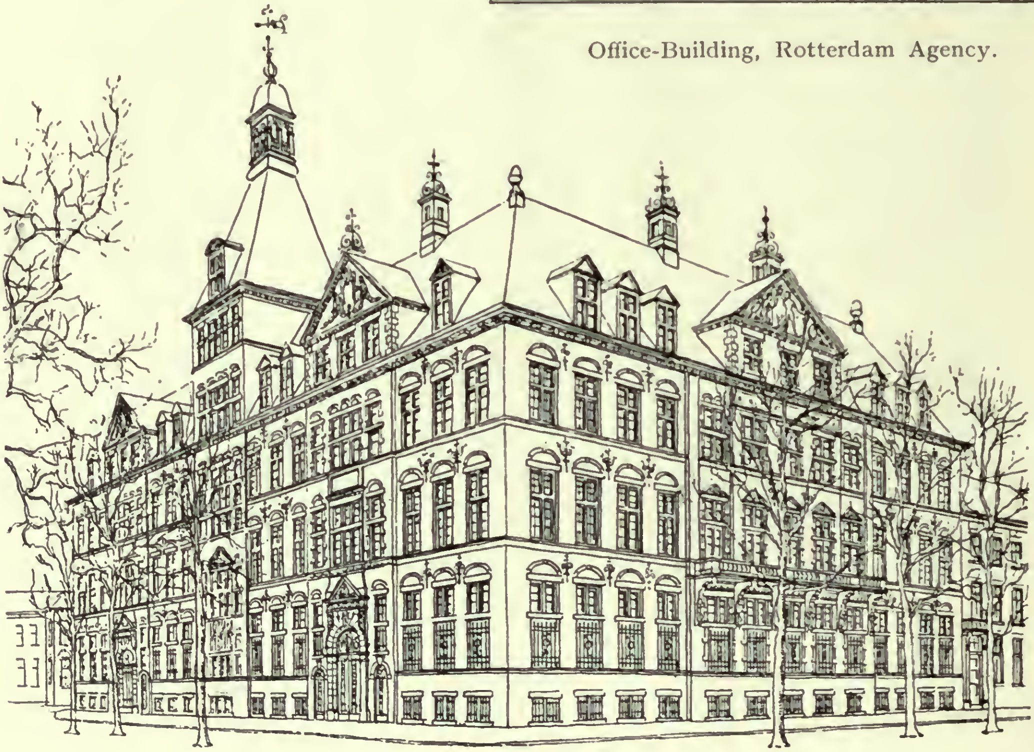
During the last decennary the local demand for commercial and industrial credits caused many local Dutch bankerfirms to seek the support of the Netherlands Trading Society, which support was willingly granted without any tendency for far going concentration, which is not in its line.

In foreign countries its correspondents are the best-known international banks.

The Head-Office of the Netherlands Trading Society is at Amsterdam, with Agencies at Rotterdam and the Hague. In Asia it has the "Factory" at Batavia as principal Agency, and it has offices at Sourabaya, Semarang, Medan, Singapore, Rangoon, Hongkong, Shanghai, Kobe, Calcutta, and Bombay; Bandoeng, Cheribon, Tegal, Pekalongan, Djokjokarta, Solo, Tjilatjap, Djember, Telok-Betong, Padang, Kota-Radja, Langsa, Tebing-Tinggi, Palembang, Bandjermasin, Pontianak, Makassar, Penang and Weltevreden.

In the Dutch West-Indies it possesses a sugar-factory and is interested in coffee- and cocoa-estates.

Office-Building, Rotterdam Agency.



Plan of the Office-Building, Agency the Hague.

Hollandsche Bank voor Zuid-Amerika

(Dutch Bank for South America)

Amsterdam.

Amsterdam
Hamburg
Buenos Ayres
Rio de Janeiro
San Paulo
Santos
Santiago de Chile
Valparaiso

Head-Office:
Amsterdam
Heerengracht 438

Buenos Ayres.

As a result of the lively commercial intercourse between South America and Europe, of which intercourse Holland, true to its old tradition, succeeded in getting its share, Dutch interests in South America are rather extensive. Several Dutch commercial enterprises have been established in or extended their sphere of action to Latin America and three Dutch steamship companies now maintain a regular passengers- and goods traffic with the A.B.C. states. Where Dutch capital sought and indeed found a remunerative investment in this country so wealthy of natural resources, the Dutch enterprise could not satisfy itself with a simple investment of money, but it desired to take a more active share in the development of the possibilities offered by Latin American countries.

Thus on the 28th. of March 1914, by Royal Decree No. 56

Rio de Janeiro.

Santos.

of April 8th. of that year, the "Hollandsche Bank voor Zuid-Amerika" was founded with a nominal capital of / 10.000.000,- divided into 50.000 shares of /200,- each, of which / 4.000.000,- were taken up by a syndicate under the "Rotterdamsche Bankvereeniging" (Rotterdam Banking Institution), while 4000 founders' certificates were issued. According to the Articles of Association the purpose of the Bank was principally to promote the trade of goods, money and exchange between the South-American states and Holland, while the description of its actions offered a reasonable margin for extension of the business in other directions. Besides financing the Dutch-South American trade and dealing with the exchange business arising therefrom, the supply of loans to Latin American republics, which, however rich of rural and mineral products, did not dispose of the financial means for an efficient exploitation of agriculture and mining, could form an important line of its business.

Directors' Meeting Room in the Head Office.

In spite of the various obstacles, not at least those caused by the war, the Bank got a firm footing in the A.B.C. states and continually obtained better results.

DEVELOPMENT OF THE BANK'S BUSINESS

FISCAL YEAR	CASH	DEPOSITS	DEBTORS	CREDITORS
			IN CURRENT ACCOUNT	
1914—15	6,202,535	1,070,557	3,234,590	3,980,404
1915—16	7,392,775	10,438,684	4.358,244	9,674,550
1916—17	15,245,319	14,090,813	15,422,007	20,513,761
1917—18	33,935,603	28,739,588	29,851,874	30,611,329
1918—19	23,640,926	38,761,406	51,341,023	37,396,565
1919—20	29,611,574	42,034,562	58,289,973	52,276,499
1920—21	27,082,215	54.656,629	62,687.675	60,287,320

IN DUTCH GUILDERS

FINANCIAL RESULTS

FISCAL YEAR	OUTSTANDING CAPITAL	RESERVE FUND	GROSS	NET	WRITTEN OFF	RESERVED	DIVIDEND	
			PROFITS				ON ORDIN. AND PREF. SHARES	ON 4000 FOUNDERS' CERTIFIC.
1914—15	4,000,000	250,000	939,557	700,826	408,213	250,000	—	—
1915—16	8,000,000	950,000	2,051,284	1,433,661	100,100	500,000	8 %	11,56
1916—17	14,000,000	2,250,000	3,094,010	2,022,208	—	550,000	8 %	19,30
1917—18	14,000,000	2,500,000	3,032,928	1,955,243	100,000	400,000	8 %	18,88
1918—19	20,000,000	3,600,000	3,875,612	2,740,686	100,000	670,000	9 %	29,89
1919—20	25,080,000	5,100,000	6,091,802	4,244,110	100,000	600,000	10 %	52 90
1920—21	25,080,000	5,100,000	9,618,958	5,955,448	718,611	4,917,650	—	—

IN DUTCH GUILDERS

Visiting Room in the Head-Office.

In the preceding summary of technical particulars the activity of the Bank during the period of its existence is clearly shown.

The extension of the Bank's field of action is also to be deduced from the opening of branch offices. On February 5th. 1917 the opening of the Rio de Janeiro office took place and on June 15th. of the same year that of the Santos branch. The establishment of the San Paulo office, delayed again and again by the Brazils' participation in the war, was carried out in 1918. In 1919 also the opening took place of branches in Santiago de Chile and in Valparaiso in order to advantage of the nitrate shipments, forming the greater part of the Chilean-European trade. While Hamburg has always been the nitrate market for Europe and moreover while German exporters preferred to finance their shipments to South America in guilders, the Hamburg office was opened in December 1919.

Apart from the increasing of capital as stated in the foregoing table of financial results in 1919 the issue of ƒ 80.000,— preferred shares took place, while from the ƒ 6.000.000,— ordinary shares taken up by a syndicate under the "Rotterdamsche Bankvereeniging" ƒ 1.000.000,— were taken over by a Swiss banking concern, the "Union Financière", the shares of the Bank thus being introduced on the Geneva exchange.

By a careful and capable management the "Hollandsche Bank voor Zuid-Amerika" hopes to get through the difficult period of general recovery and there is no doubt but it will work afterwards with an ever growing success and not only maintain its position in Dutch-South American trade and traffic but also continually add to strengthen same.

Office of the Management.

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